THE THERAPEUTIC GAZETTE

INCORPORATING

MEDICINE AND THE MEDICAL AGE

Whole Series. Vol. XXXVI. | DETROIT, MICH., JUNE 15, 1912. | Third Series. Vol. XXVIII, No. 6.

ORIGINAL COMMUNICATIONS.

THE TREATMENT OF SEASICKNESS—A REPORT OF TWENTY-TWO CASES TREATED BY VERONAL.[1]

BY ISAAC W. BREWER, M.D.

First Lieutenant, Medical Reserve Corps, U. S. Army (Active List).

A large proportion of the passengers on seagoing vessels suffer from seasickness. Gihon estimates that 5 per cent are immune, that 25 per cent are but a little sick, that 60 per cent are a great deal sick, and that 10 per cent are distressingly ill. However, these figures cannot be taken to mean that these proportions are always sick. During calm weather very few suffer, while during severe storms a large proportion of the passengers will be sick. There are persons who never set foot on a steamer without being sick.

The literature upon seasickness is very unsatisfactory, and detailed studies of its symptoms and treatment are to a large extent lacking. Few of the many remedies that are recommended are of any service.

Seasickness is closely related to carsickness and elevator-sickness, and they probably have a common cause. That the motion of the ship is the exciting cause there can be no doubt, but it seems that back of this there is an underlying nervous instability that is the predisposing cause. There have been many theories advanced as to the cause of the disease. One is that the constant vibration irritates the nerve endings in the semicircular canals. Other theories are the visual irritation by the constant motion of the surrounding objects, the shaking of the stomach, intermuscular shaking, concussion of the brain, and autointoxication. None of these theories seems to satisfy the conditions as observed in a large number of cases.

Seasick persons may be classified as follows:

1. Those who are but slightly ill, suffering from malaise, giddiness, followed by headache, yawning, and drowsiness, with some distress in the stomach.

2. More severe cases, in which there is nausea, vomiting, vertigo, anorexia, moderate prostration, grayish pallor, and unsteadiness of gait.

3. Cases in which there is extreme nausea, continued emesis, and great prostration. In one case the vomiting was so severe that a vessel in the stomach was ruptured and considerable blood lost, and the child was ill for several days after landing. I know of a physician who in addition to the other symptoms suffers from a severe diarrhea whenever the sea is rough.

Almost every one who has suffered from seasickness has a sure cure for the disease, but when these remedies are tried by others they generally fail. Many physicians who go to sea have come to the conclusion that there is no cure for the disease, and that

[1]Published by permission of the Surgeon-General, United States Army.

the best that can be done is to keep the patient in the recumbent position in the fresh air, and to endeavor to maintain proper nourishment.

This was about the position occupied by the writer when he was detailed as surgeon of one of the army transports in 1910. The ship to which he was attached made trips throughout the Philippine Archipelago, frequently making the ports on the east coast of the Island of Samar, which have an unenviable reputation for roughness. Shortly after joining the transport there appeared in the *Lancet* a short notice of fifty cases of seasickness that Dr. Pauly, of the Hamburg-American Line, had treated with veronal-sodium. The results were so encouraging that an endeavor was made to obtain some of the drug, but it could not be had in the Orient. A supply of veronal was obtained and used with satisfactory results. However, in interpreting these results the reader should remember that during fourteen months our vessel did not encounter a severe storm, a most unique experience in the Philippine waters. There were days when the sea was rough and many persons were sick. Some of those treated had never made a voyage without being sick. In all twenty-two cases were treated, 81.8 per cent being relieved entirely, and 18.2 per cent were not benefited. In every instance the person was actually ill when the drug was administered, and in most instances relief was had within thirty minutes. A number were treated on several different occasions with good results. In several instances after it had been demonstrated that the drug would relieve the symptoms it was used a second time as a prophylactic. Usually the relief was prompt and permanent, and more than once the patient was able to return to the saloon at the second sitting and eat a good meal.

At first the drug was given in doses of 0.324 gramme, but later it was learned that doses of 0.120 gramme were just as effective. Unfavorable symptoms were had in three cases. The first was a man, who was given 1 gramme in three doses covering a period of twelve hours, with relief of the seasickness, but on the following day when he landed he had lost, to a considerable extent, the power of coördination and staggered like a drunken man. The condition improved in the course of the day, and on the following day he was entirely well.

The second case was a young woman, who was given 0.324 gramme in two doses at an interval of one hour. This relieved the symptoms promptly, but she was drowsy for two days.

The third case was a neurasthenic lady who was accustomed to "faint." She was given 0.120 gramme, but vomited in a few minutes. A second dose of the same size was given at once, and in about an hour she fell from her chair. Her pulse was weak and the respiration shallow, but these symptoms were quickly relieved by the administration of 15 Cc. of aromatic spirits of ammonia. However, she complained of numbness in the arms, hands, and legs for several hours.

CONCLUSIONS.

Twenty-two cases studied under rather favorable weather conditions do not warrant us in assuming that veronal will cure as many cases under more severe weather conditions. It seems that the drug holds a high place in the treatment of seasickness, and that it will relieve cases that have not been reached by other remedies.

Veronal is not a safe drug to put in the hands of the public to be used in the treatment of seasickness.

The unfavorable results obtained seemed to have been due to the use of too large a dose.

UNTOWARD EFFECTS OF SALVARSAN REFERABLE TO THE EYE AND EAR.

BY SIDNEY L. OLSHO, M.D., PHILADELPHIA.

The tempering of the extravagant claims first made for salvarsan occasion no surprise to physicians of long experience. Ehrlich[1] himself admits that it is impossible to have established firmly the therapeutics of the new preparation in the time that has elapsed since its introduction. He comments on the fact that the therapy even of mercury is not yet perfectly understood.

The accumulated clinical laboratory and experimental evidence of the spirillocidal action of salvarsan seems incontrovertible. The recurrences following its use are explained on grounds other than non-specificity.

Annoying by-effects attracted attention from the very first. Many of these have been found avoidable and are avoided by certain clinicians with the advent of improved technique of administration and a better understanding of the therapeutics.

Untoward effects of greater importance now attract attention. These are referable to the cranial nerves. Until it is definitely established just how far these so-called regional recrudescences are attributable to toxic action of salvarsan and how they may be avoided, if avoidable, the therapeutic status of the new preparation must be considered as still unsettled.

Cases of optic neuritis, some of them transitory, following the use of salvarsan are reported by Finger,[2] Kowalewski,[3] Blaschko,[4] Held,[5] Rille,[6] Oppenheim,[7] von Zumbusch,[8] Fordyce,[9] Falta,[10] Heuser,[11] and others.

Igersheimer,[12] experimenting on animals, showed that there was an accumulation of arsenic in the eyeballs of those that had received injections of salvarsan. Elsewhere[13] he asserts that not only has salvarsan no injurious action on the eye, but in many cases in his experience it had a curative effect on existing syphilitic eye affections.

A case of oculomotor palsy is reported by Stern.[14] Davids[15] reports a case of bilateral iritis in eyes previously sound, accompanied by a pronounced Herxheimer reaction, developing two days after the first and subsiding promptly after the second intravenous injection of salvarsan. Heuser[11] reports a case of iritis and epileptiform convulsions. Epileptiform convulsions are reported also by Spiethoff[16] and Gilbert.[17] Falta[10] notes the aggravation of deep eye disturbances in two cases under salvarsan, and thereafter the failure of the disturbances to retrogress, as they usually do under mercury. Fleming[18] studied the histories of 180 cases of syphilis of the eye treated in Greef's clinic. Improvement of the subjective symptoms occurred, but they were no more pronounced than with the older antisyphilitic measures. Eight cases in the series had a relapse. Ill effects were attributed to the lues itself rather than to the treatment. The general tendency is to blame the salvarsan for everything that occurs subsequent to the injection. Eye disturbances may be only seemingly more frequent under salvarsan treatment. The routine eye examinations now made reveal many cases of eye disturbance that hitherto might have escaped notice. Dimmer[19] treated with good results many eye lesions, including seven cases of iridocyclitis luetica. In one case there was a recurrence with severe papilloretinitis. Doerr[20] treated 270 cases successfully.

From the first Ehrlich[1] warned against using salvarsan in cases which had undergone previous arsenical cures. This warning was disregarded even by Finger. Ehrlich originally excluded all eye diseases from salvarsan treatment, but its use was gradually extended to cases of syphilitic iritis, neuroretinitis, and iridocyclitis. And according to him, good results have been obtained in these conditions by Deutschmann, Gross, Havas, Igersheimer, Romer, Schanz, Wechselmann, and Seligsohn. Gross gave salvarsan in optic atrophy. An acute injury did not occur, but a slight im-

provement was obtained in some of the cases. Hirsch[21] favorably influenced a severe case of optic neuritis, although the prognosis was bad. From these facts and from the fact that of the thousands of cases that have been treated no case has been blinded, Ehrlich concludes that salvarsan, as such, has no unfavorable influence on the eye. His explanations for the untoward effects referable to the eye and ear which are attributed by others to salvarsan are discussed together.

Auditory and labyrinthine disturbances following the use of salvarsan are reported by Finger,[2] Frey,[22] Rille,[6] Kren,[23] Urbantschitsch,[24] Matzenauer,[25] Ullman,[26] Rusch,[27] Beck,[28] Zechmeister,[29] Alexander,[30] Richards,[31] Lazarus,[32] von Zumbusch,[8] Port,[33] Ehrmann,[34] Sellei,[35] Treupel and Levi,[36] and others. The disturbances in some of the cases were transitory.

Cases of facial palsy have been reported by Rille,[6] Zeissl,[37] Heuser,[11] Treupel and Levi.[36]

Heuser also reports a case of paralysis of the vocal cords and the soft palate three days after an intravenous injection of 0.5 gramme, followed for two months by occasional outbreaks of profuse perspiration, suggesting a possible general injury of the nervous system.

Finger[2] says that his cases of untoward symptoms referable to the optic, auditory, and oculomotor nerves disprove the absolute harmlessness of the preparation, but that part of the injuries may have been due to the poison of syphilis. Commenting on Igersheimer's experimental research, he says that the finding of arsenic in the eyeballs of the animals certainly suggests caution.

Von Zumbusch collected from the literature nine cases of auditory disturbance occurring among a total of 7000 cases treated.

Benario[38] collected the experiences of a number of physicians by letter. There were 126 neuro-recurrences in a total of 14,000 cases treated with salvarsan.

Beck[39] examined over 100 syphilitics in Urbantschitsch's clinic after salvarsan treatment. He states that changes may be observed in the internal ear after the administration of the drug. In three cases particularly, he noted changes in the labyrinth and vestibule. The symptoms appeared in from five to nine weeks after the treatment, in ears to which the patients had never had their attention attracted before. Treatment for three weeks had not modified the conditions. Another case showed symptoms typical of Menieriform modified the conditions. Another case changes in the vestibular nerve appearing four months after the injection and not yielding to treatment. Similar symptoms have been observed in untreated syphilis, but they almost invariably show a decided tendency to retrogress, while in the above case they have persisted. He knows, however, of a similar persisting syndrome in a case in which no salvarsan had been given. He adds that ear affections in untreated syphilis are comparatively rare, while they have become unusually common since the introduction of salvarsan.

Mayer,[40] basing his conclusions on the histories of 65 cases of syphilitic disturbances of the auditory nerve, observed since 1896, and on 66 cases reported previous to that time, says that the series shows that the auditory nerve is liable to become affected as early as six weeks after infection, and that auditory trouble is most common in the first six months. It may, however, occur years later, as a recurring syphilitic manifestation. The comparatively large number of cases of isolated vestibular disturbances occurring soon after salvarsan, some within a few hours of the injection, point rather to a toxic action of salvarsan.

Ehrmann[30] ascribes the disturbances in the ear, in part to the Herxheimer reaction, in part to the syphilitic process itself, and in part to the direct action of the mercury or salvarsan. But he believes it is more liable to occur in the cases with local infiltration or gangrene at the site of the injec-

tion because of the possible decomposition of the salvarsan in tissues of this kind. Abuse of tobacco also may, in his opinion, render the auditory nerve particularly susceptible. Ehrmann mentions two cases of auditory disturbance under mercurial treatment.

Frey[41] remarks that auditory affections due to acquired syphilis are common, but are now attracting particular attention. Auditory examinations are more frequent than heretofore, thus the presence of unsuspected disturbance is revealed.

Wechselmann[42] attributes the after symptoms observed in the nervous system to spirochætæ which have become encapsuled in single areas withdrawn from the influence of the salvarsan. These, after a certain time, manifest their presence by giving rise to regional recurrences. He describes here several cases occurring in the iris and in the trochlearis. Benario's[38] collection of cases of neuro-recurrences confirm, he says, Ehrlich's explanation of these disturbances, namely, as manifestations of syphilis in nerves enclosed in narrow bony canals, the work of a few spirochætæ which have escaped destruction. The striking clinical symptoms are due not as much to the extent of the process as to the confined site. Study of the data collected shows that the early secondary stage is peculiarly predisposed to these neuro-recurrences, as also are the cases in which the primary sore is extragenital. Port,[33] however, thinks that the neuro-recurrences are due to toxic injury of the nerves, not only by the endotoxin of the germs killed but also by the drug itself.

Ehrlich's explanations are based on the experiences with thousands of cases at scores of clinics with which he keeps in constant touch.[1] He states that among 7000 cases at 25 clinics there were nine cases of acoustic disturbances, part of them associated with disturbances in other nerve regions. He claims to have established:

1. The disturbances mentioned occurred exclusively in patients who were treated subcutaneously, mainly by the emulsion method, by a single dose, not followed by forced administration of salvarsan.

2. That without exception the patients were in the fresh stage of the disease, namely, two to eight months after infection.

3. That in the preponderance of the cases the Wassermann reaction was negative.

Ehrlich does not admit that salvarsan has a toxic influence on certain nerve regions, arguing:

1. That the same symptoms, optic and acoustic, occurred in recent syphilis treated with mercury, as has been pointed out by Benario and Urbantschitsch.

2. That those who employed the largest doses of salvarsan, viz., Gennerich, Duhot, Weintraud, did not observe these disturbances. If the salvarsan were toxic these observers logically should have the largest number and the most severe of these cases.

3. That a portion of the cases observed were promptly benefited by antisyphilitic remedies, and that in some instances the cure was brought about by additional salvarsan. If toxic, salvarsan would have aggravated these cases.

4. That spontaneously occurring acoustic and optic disturbances are excellently influenced by salvarsan.

Ehrlich concludes that optic and acoustic disturbances are natural phenomena of recent syphilis and are recurrences in nerve tissue, and are not manifestations of a toxicity of salvarsan.

REFERENCES.

1. Ehrlich: *Münch. med. Woch.*, 1911, No. 1.
2. Finger: *Wien. klin. Woch.*, 1910, No. 47.
3. Kowalewski: *Berl. klin. Woch.*, 1910, No. 47.
4. Blaschko: *Monatsh. f. prakt. Dermat.*, lii, No. 2.
5. Held: *Ibid.*
6. Rille: *Berl. klin. Woch.*, 1910, No. 50.
7. Oppenheim: *Monatsh. f. prakt. Dermat.*, lii, No. 6.
8. von Zumbusch: *Ibid.*
9. Fordyce: *J. A. M. A.*, Jan. 21, 1911.
10. Falta: *Deut. med. Woch.*, 1911, No. 15.
11. Heuser: *Med. Klin.*, 1911, No. 15.
12. Igersheimer: Discussion following reference No. 2, *supra.*
13. Igersheimer: *Münch. med. Woch.*, 1910, No. 51.
14. Stern: *Deut. med. Woch.*, 1911, No. 1.
15. Davids: *Deut. med. Woch.*, 1911, No. 13.
16. Spiethoff: *Münchener med. Woch.*, 1911, No. 4.

17. Gilbert: *Münch. med. Woch.*, 1911, No. 7.
18. Fleming: *Archives of Ophthalmology*, 1911.
19. Dimmer: Discussion following reference No. 2, *supra*.
20. Doerr: *Ibid.*
21. Hirsch: *Münchener med. Woch.*, 1910, No. 49.
22. Frey: *Wien. klin. Woch.*, 1910, No. 50.
23. Kren: Discussion following reference No. 2, *supra*.
24. Urbantschitsch: *Ibid.*
25. Matzenauer: *Ibid.*
26. Ullman: *Ibid.*
27. Rusch: *Ibid.*
28. Beck: *Wien. klin. Woch.*, 1911, No. 52.
29. Zechmeister: Discussion following reference No. 2, *supra*.
30. Alexander: *Bost. Med. and Surg. Jour.*, March 9, 1911.
31. Richards: *Ibid.*
32. Lazarus: *Deut. med. Woch.*, 1911, No. 4.
33. Port: *Med. Klin.*, 1911, No. 11.
34. Ehrmann: *Wien. klin. Woch.*, 1911, No. 3.
35. Sellei: *Münch. med. Woch.*, 1911, No. 7.
36. Treupel and Levi: *Münch. med. Woch.*, 1911, No. 5.
37. Zeissl: *Wien. med. Woch.*, 1911, No. 7.
38. Benario: *Münch. med. Woch.*, 1911, No. 14.
39. Beck: *Münch. med. Woch.*, 1911, No. 3.
40. Mayer: *Wien. klin. Woch.*, 1911, No. 11.
41. Frey: *Wien. klin. Woch.*, 1911, No. 11.
42. Wechselmann: *Deut. med. Woch.*, 1910, No. 37.

DILATATION OF THE PROSTATIC URETHRA FOR THE RELIEF OF THE SYMPTOMS OF PROSTATIC ENLARGEMENT.

BY E. HOLLINGSWORTH SITER, M.D.,
Genito-Urinary Department, University Hospital, Philadelphia.

With the results of the prostatectomies of a number of operators coming before me from time to time in the wards of the Philadelphia General Hospital, and the outwards of the same institution, it is constantly impressing itself on my mind that less radical procedure would be of advantage, as I think the percentage of failures is too large by far.

We see many patients with persistent vesical sinus, or wearing apparatus for the constant dribbling, and surely the last conditions are worse than the first; the remedy worse than the original trouble. Of course, it is unfortunate that all results are not brilliant, but as they are not, we should face the facts and try to remedy or avoid them, if possible.

The Bottini operation having been discarded, the only procedure left for the relief of the symptoms of prostatic enlargement is prostatectomy. But there are many cases not fit for the sometimes prolonged anesthesia and shock of prostatectomy; for such some simpler method should be devised.

Some years ago, a patient upon whom I proposed to do a suprapubic prostatectomy did not do well with his ether after I had opened his bladder, and I was led to try dilatation of his prostatic urethra with my finger. My results were so gratifying that I have since employed this method frequently. This patient's urinary difficulties disappeared. His age was sixty-five years, and owing to the fact that there had been no disturbance or injury to his ejaculatory ducts and vesicles, he had had no interruption of his sexual life.

With this idea in view, I some years ago tried the dilatation of the prostatic urethra through a suprapubic opening, with the removal of the "third lobe" of the prostate where it existed. My results have been so satisfactory that I feel that the method should be given further trial, and possibly adopted in many cases in preference to the more radical prostatectomy.

Operation.—Anesthetic, either a general anesthetic, which is not necessary, or spinal stovaine-strychnine anesthesia, or local with cocaine or beta-eucaine.

A very small suprapubic opening is all that is necessary, just sufficient to admit the passage of one finger into the bladder. The finger having been passed in and down the vesical neck, the "middle lobe" can be easily removed if it is found to bar the opening into the prostatic urethra. The "middle lobe" having been removed, forcible dilatation is practiced by pushing the finger as far down into the urethra as possible and allowing it to remain for five minutes. The finger is then withdrawn, and the

bladder is irrigated with sterile water or normal salt solution. A catheter is introduced through the urethra and tied in. The suprapubic wound is entirely closed, allowing drainage to be from the catheter.

The catheter is left in place for forty-eight hours, and the bladder is irrigated twice daily with normal salt solution. After the catheter is withdrawn it should be passed twice daily for several days to relieve the suprapubic wound from strain until the union is firmly established.

The daily irrigation should be continued over a period of ten days or two weeks, and I have found that silver nitrate in 1:6000 solution restores tone to the bladder more rapidly than any other preparation.

A glance over the following cases will illustrate the points of advantage:

Case 1.—July 12, 1906. W. E. B., aged fifty-six, married; urinating every hour and a half during the day, and five to six times at night. Some tenesmus, no hematuria, no venereal history. Urethral caliber 28 F.; moderately enlarged, fairly hard prostate, by rectal examination; residual urine, 2 ounces. Microscopical examination showed pyuria.

Operation July 14, 1906. Anesthetic, ether. Small suprapubic incision in median line. Intravesical examination revealed small median lobe. This was removed, and the prostatic urethra was dilated with the finger. The suprapubic wound was entirely closed and a catheter was tied in and retained for forty-eight hours. Daily irrigation with 1:6000 nitrate of silver. Recovery prompt. Out of bed in five days.

July 18, when daily catheterization was stopped, the patient was urinating five to six times daily, and did not rise at night. This patient has reported from time to time and has had no return of his vesical symptoms, nor has there been an interruption to his sexual life.

Case 2.—August 3, 1906. J. B. E., aged sixty-one, married; no children; vague venereal history. Urinating every two hours, imperative; up four to five times at night. Takes No. 26 French sound with ease. Residual urine 6 ounces. Large, soft prostate; some cystitis.

Operation August 5, 1906. Cocaine anesthesia. Small median suprapubic incision. Bladder examination showed small transverse band across urethral opening. Band was removed and dilatation was done with the finger. Wound closed. Catheter retained for forty-eight hours. Daily irrigation with silver nitrate. Up in chair in four days, with no return of vesical symptoms.

Patient reported in four months that there was no return of symptoms and that sexual function had not been interrupted. He was seen two years after operation, and while there was no day frequency, he was rising once at night. There was practically no residual urine. He was irrigated with nitrate of silver several times, when his symptoms disappeared. I have irrigated this patient at intervals since, but at no time have his vesical symptoms returned.

Case 3.—September 12, 1906. J. A. C., aged seventy. No venereal history; urinating every hour and five to six times at night. Urethral caliber No. 28 French. Large, soft prostate. Residual urine 8 ounces.

Operation. Anesthetic, cocaine, 2 per cent. Suprapubic cystotomy. No median lobe. Digital dilatation; suprapubic wound closed; catheter drainage; irrigation, silver nitrate 1:6000. Patient was up on the fifth day.

September 24, 1906, patient reported that he was urinating every four hours during the day and once at night. No residual urine. March 19, 1909, no return of vesical symptoms.

October 29, 1910, patient had return of urinary difficulty; some cystitis; urinating every two hours during the day and three times at night. Residual urine 4 ounces. November 6, 1910, operation of four years ago repeated under cocaine. Vesical examination through the suprapubic wound showed contraction of prostatic urethra. November 18, 1910, patient urinating every four hours and does not rise at night.

Cystitis had subsided. November 15, 1911, patient reported no return of symptoms.

Case 4.—November 12, 1906. S. L. B., aged sixty-eight, married. Gonorrhea many years ago. Complained of constant dribbling and wetting of clothes and bedding. Urethral caliber No. 28 French; soft prostate of moderate size. Residual urine 10 ounces; marked cystitis.

November 20, 1906, operation. Suprapubic cystotomy under cocaine. Rather marked median lobe. This was removed, the prostatic urethra was dilated, the suprapubic wound was closed, and catheter drainage was put in. Irrigation with silver nitrate twice daily.

November 30, 1906, patient was out of bed. No residual urine; cystitis nearly disappeared; no dribbling. Urinating every three hours during the day and rises once at night.

December 10, 1906, patient reported urinary conditions same as on November 30. Urine was practically clear.

May 20, 1907, cystitis had disappeared; no residual urine. Urinating every four hours during the day and rises once at night.

December 23, 1907, patient reported no change. Urine was clear.

May 6, 1911, condition satisfactory and no return of symptoms.

Case 5.—November 26, 1906. W. F. B., aged sixty-two, single. Two attacks of gonorrhea; last attack twenty years ago. Complained of a gradually increasing difficulty in urinating with increasing frequency and great disturbance at night.

Urethral examination negative. Residual urine 6 ounces. Rectal examination, moderate prostatic enlargement, fairly hard; some tenesmus with occasional hematuria. Urinated every hour during the day and every two hours at night. Pus and a few red blood cells found in the urine.

Operation November 28, 1906. Cocaine locally. Patient had very much thickened bladder walls and a moderate median lobe. The median lobe was removed and digital dilatation done. Suprapubic wound closed; catheter drainage for forty-eight hours, with irrigation of 1:6000 nitrate of silver twice daily. Patient was out of bed on the fifth day, the vesical symptoms rapidly subsiding; urinating every three hours during the day and but twice at night.

December 10, 1906, urine clear. Urinated every four to five hours during the day and once at night.

This patient since his operation in 1906 has had two relapses, and the same procedure, *i.e.* dilatation, was gone through with, and the results have been satisfactory each time. The last operation was done October, 1909, and there has been no return of symptoms so far.

Case 6.—June 10, 1907. H. A. F., aged sixty, married. Two attacks of gonorrhea; last one thirty-five years ago. Complained of frequent and imperative urination, which was particularly annoying at night; urinating every three or four hours during the day and four or five times at night. Urethral examination negative. Residual urine 4 ounces. Rectal examination showed moderate enlargement.

June 18, 1907, operation. Ether anesthesia. Suprapubic cystotomy. Removal of a small median lobe and urethral dilatation. Wound closed; catheter drainage and irrigation.

June 28, 1907, subsidence of nocturnal symptoms, and urination during the day not so imperative. July 6, 1907: Does not rise at night. Urinating four to five times during the day.

I have seen and heard from this patient frequently since 1907, and he has had no return of his difficulty.

Case 7.—September 10, 1908. W. H. M., aged sixty-three, married; no venereal history. Complained of frequent urination, both diurnal and nocturnal. Urethral examination negative. Residual urine 10 ounces. Rectal examination showed moderate soft prostate.

Operation October 1, 1908. Cocaine locally for anesthesia. Suprapubic cystotomy, removal of a third lobe, and dilatation were done. Wound closed; catheter drainage and irrigation.

October 10, 1908, great relief from symptoms. Cystitis modified, but annoying. October 20, 1908, cystitis was still troublesome, and daily irrigation was continued, with the passage of a full-sized sound. November 2, 1908, cystitis had almost entirely disappeared and urine had cleared up. November 15, 1908, patient had no difficulty whatever.

I have seen this patient many times since and his condition is still most satisfactory.

I have now used this method on a number of cases and they have been most satisfactory. There is no loss of blood, practically no shock, and the patient can be up and about in a few days.

To recapitulate, I think dilatation has the following points to recommend it: absence of shock, absence of interruption to sexual life, brevity of the operation, absence of secondary hemorrhage, quickness of recovery, absence of postoperative incontinence, and the fact that the operation can be done at once without waiting for the disappearance of a long-continued and troublesome cystitis, due to the catheter life so many prostatics lead before they come to operation.

Then, again, the operation is so simple and safe that I would not hesitate to repeat it in a few years or every few years, if there is no permanency to the relief and there is a return of symptoms.

THE ADMINISTRATION OF ANESTHETICS, WITH SPECIAL REFERENCE TO CHLOROFORM AND ETHER ANESTHESIA.

BY W. P. BURDICK, M.D., KANE, PENNSYLVANIA.

Although in the routine of a general practice extending over twenty-three years I have administered many anesthetics, it has only been during the past two years, or during the period of my connection with the Kane Summit Hospital, that I have given the subject special attention. During these two years, however, and somewhat to my surprise, the study of anesthetics has become exceedingly attractive and interesting to me. I think I can truthfully say that after fifteen or twenty years of practice, and the occasional administration of an anesthetic, I had no more practical working knowledge of the subject than when I began; and I believe this to be the experience of most practitioners. With what I may now claim as a fairly expert knowledge of anesthetics, I look back with apprehension to a time, not so long ago, when I considered myself quite clever in the administration of chloroform and ether, solely on the ground that my patients did not die on the operating table. I now realize, however, that there are certain people retaining their grip on earthly things who must give the credit to some higher power than myself. I thought that the most important thing was to get my patients asleep, and keep them asleep. Not only did I but slightly realize the imminent danger my patients must often have been in from imperfect administration of the drug, but I practically gave no thought at all to the postoperative tortures that lasted for days, and were mostly due to the same cause, and very slightly, if at all, to the operation.

It is generally accepted as a fact that the average patient who is to submit to a surgical operation, where an anesthetic is required, dreads the anesthetic, as a rule, far more than the operation itself. This is especially true if the patient has once passed through the ordeal of a faulty administration. It is partly because of a realization of this fact that we have had the recent widely extended agitation demanding specialism in anesthetics, and proper provision for instruction and teaching on the subject in our medical schools. In his presidential address in 1908, Dr. Baldy of Philadelphia made the following statement: "The general administration of anesthetics as performed to-day is the shame of modern surgery, and a disgrace to a learned profession." Dr. Hunter Robb

has said: "If any one of us were going to be operated upon and had time to do so, he would undoubtedly make three stipulations. He would, I think, demand first the best possible hospital facilities; secondly, a skilled operator; thirdly, a skilled anesthetist. When a patient dies upon the table from the anesthetic we are very properly shocked; but how about the later suffering or even fatalities, from an improperly administered anesthetic?"

Since the attention of the medical world was called in so forcible a manner to these deplorable conditions, there has been, as I have said, an almost universal awakening, and the result is that even now most hospitals, especially in our larger centers, have specialists in anesthetics, with complete modern equipment for administration by the most approved methods.

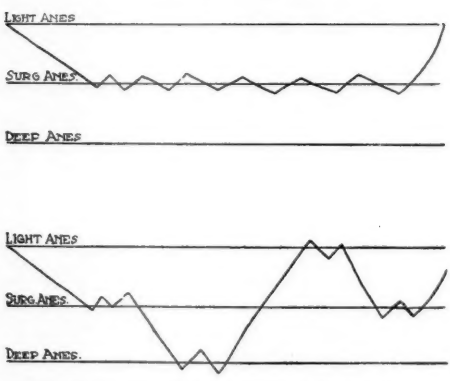
The word anesthesia is defined as a loss of sensation, and may be general or local. In general anesthesia, sensibility, or consciousness as well as sensation, is lost. I shall confine this paper to a discussion of general anesthesia, with special reference to the administration of chloroform and ether. When patients are admitted to the hospital for operation, I call and introduce myself as the physician who is to administer the anesthetic. After making an examination of the heart, etc., I engage the patients in conversation, the object of which is to allay fear and anxiety. I assure them that they will take the anesthetic without any trouble, that I will give it slowly, and that there will be no disagreeable sensations. I give instructions to the nurse that the patients shall have plenty of water to drink throughout the night, and shall frequently use during the evening and the next morning an antiseptic mouth-wash. I also receive, before leaving, a report of an analysis of the urine. It is the routine practice of many surgeons to order a preliminary hypodermic injection of from one-sixth to one-fourth of a grain of morphine, usually with a small dose of atropine, given ten minutes or a half-hour before operation. Other surgeons object to the use of these drugs, among them Dr. Even O'Neil Kane, surgeon to the Kane Summit Hospital. I will give the reasons for and against their use later in this article.

When the patient is brought into the anesthetic room absolute quiet is insisted upon, for it should be remembered that all sounds are very much magnified to a patient who is about to pass into the second stage of anesthesia. The friends are kindly but firmly excluded, and I prefer even not to have the family physician present, as he is very apt, in his anxiety to make good, to tell the patient with many reiterations that he is all right, that he (the physician) is right there on the job and will stay by him; or he instructs the patient to take deep breaths, etc. The subject for anesthesia should never be told to breathe deeply, nor be requested to count; both have a tendency to arouse the patient's fears and disturb tranquillity.

When the anesthetist is ready to begin, the patient is told in a low voice to close the eyes and go quietly to sleep; and occasionally, during the first two or three minutes, it should again be suggested in the same low tone that he try to go to sleep, and to keep the eyes closed; or, "Don't mind the smell in the beginning, etc." Never say, "Don't mind the smothering sensation"—that is sure to cause anxiety. We are now considering the administration of ether or chloroform alone, and not preceded by ethyl chloride, or nitrous-oxide gas, or any mixture. Murphy prefers ether. Keen uses it without the sequences in 95 per cent of his operations, as do many others. At the Kane Hospital ether is used almost exclusively.

A small layer of absorbent cotton moistened with boracic acid solution is placed over the patient's eyes, and an inhaler, which is an improved Schimmelbusch, is used. The inhaler is covered with a pad consisting of about six layers of gauze, and I also use a long pad or towel composed of several layers of gauze for reënforcement as the anesthesia proceeds, wrapping it around the border of the inhaler, and dropping the ether through the opening at the top. I also use a drop bottle. The

drops are small, and it can be easily regulated, by means of the thumb-screw, to drop with the desired frequency. The mask being placed over the face, two or three inspirations are allowed without any ether. Then a few drops of cologne are used on the mask, and in a few seconds four or five drops of ether. The patient is then asked if the smell is pleasant. I then proceed steadily with the ether, at first slowly, but as the patient becomes accustomed to the vapor the amount is rapidly increased, until the dropping borders on a stream. As soon as the patient is sufficiently asleep as to not respond to questions, the towel of gauze, moistened, is wrapped around the mask. The patient will pass into the unconscious state in from three to five minutes, and should be ready for the operator in about ten minutes. In my anesthetic work I am usually assisted by a graduate nurse, who is herself a competent anesthetist. It is her duty to frequently count the pulse and respirations, to keep the patient's mouth as free as possible from mucus and vomitus, if vomiting occur (and some surgeons insist upon stopping the operation and having the stomach washed out at once in such cases), and to be ready instantly to assist in combating any accidents that may arise. I endeavor now to keep the patient in surgical anesthesia until the operation is completed. The accompanying chart will explain what I mean by surgical anesthesia.



Intermittent anesthesia is wrong in principle.

Some instructors say, "Watch the patient, but not the operator." I should amend this by saying, "Watch the patient and the field of operation sufficiently to keep yourself informed as to its progress." Only in this way will it be possible, in a prolonged abdominal operation, for instance, to meet the conditions that will arise, and keep the patient steadily at a point of surgical anesthesia. Before the incision through the skin and peritoneum is made the anesthetic must be pushed somewhat. After entrance to the abdominal cavity and during intra-abdominal manipulations, if there is to be no traction on the parietal peritoneum, the number of drops is decreased to perhaps twenty or thirty to the minute. If pulling on the parietal peritoneum is to occur, as in removal of ovaries, uterus, or breaking up of adhesions, the anesthetist should be aware of it in sufficient time to increase the anesthetic before such traction actually begins.

As the accidents of chloroform and ether administration are met by practically the same methods of procedure, and as the technique of chloroform administration differs slightly from that of ether, I will, before considering such accidents and the means of combating them, take up the subject of chloroform and the proper method of giving it.

Chloroform should always be pure, and this of course applies as well to ether; and if there is any doubt about its purity, Hepps's smelling test will enlighten one. A piece of Swedish filter-paper is dipped in the chloroform and allowed to dry. If there is no odor it is pure, but if there is a peculiarly sharp, irritating odor, it is not pure, and the odor is due to its at least partial decomposition into hydrochloric acid and chlorine. Contact with air or oxygen does not affect chloroform deleteriously, but light does, and bright sunlight rapidly decomposes it. In administering either chloroform or ether, the room of course should be moderately warm, about 75° F., and in both cases also all loose articles, such as false teeth, gum, etc., should be removed from the mouth. Up in my country, where there is a large

Swedish population, I sometimes find it necessary to remove snuff.

In the administration of chloroform the drug must be used slowly in the beginning; and it is well to remember that more than ninety per cent of all deaths due to chloroform occur in the first stage—in fact, during the first few inhalations of the vapor. As in ether, quiet must reign supreme, the anesthetist gently reassuring the patient and suggesting sleep. The mask should not rest upon the face in the beginning, but be held an inch or more above it and slowly lowered until within a half-inch, during the first two minutes. If all goes right, and the patient breathes well, the mask may now be lowered to the face and the rate of dropping should be about two drops per second. There should be no intermission in the dropping until the patient is fully under the influence. There is a certain point at which the stage of excitement sometimes begins. The patient is very apt to hold the breath, and an anesthetist whose experience has been limited may become somewhat anxious or alarmed. It is only necessary to remove the mask, press lightly on the lower end of the sternum, and command the patient firmly to go on breathing, giving at the same time a breath or two of air minus the chloroform. When respiration is regular, continue the anesthetic. If one loses too much time at this point the patient may become very much excited (alcoholics especially), but if one is careful to give just the right amount of chloroform the excitement is usually of short duration or entirely avoided. If the patient attempts to vomit do not stop the anesthetic unless the stomach contents actually come up into the throat. Should they do so they must be quickly cleaned out with gauze wrapped around the finger or a pledget seized in a pair of curved forceps.

When the operation is begun the amount of chloroform is of course diminished. In chloroform anesthesia it is much more important to watch the pupils than when ether is given. In the early stage the pupil becomes dilated for a minute or two, but after the patient becomes fully asleep the pupil contracts slightly beyond the normal and should remain so until the end of anesthesia. Secondary dilatation means that the chloroform is being crowded too much, and so the pupil should be frequently inspected, especially during the later stages of anesthesia. Never stick the finger in the eye to test the conjunctival reflex. Anywhere from five to twenty drops per minute is all that is usually required to keep the patient in a state of surgical anesthesia. About one ounce should be sufficient to keep the patient thoroughly asleep for one hour.

As regards accidents, two kinds happen in the administration of chloroform. That from prolonging the use of the drug too far, and occurring after the patient is altogether insensible, is rather uncommon. The more numerous class of cases occur during the early stages of administration. Of the two, the latter are the more perplexing, not to say startling. Certain weaknesses of the heart are liable to make mischief when chloroform is given. Just why the heart behaves as it does is not fully known. Some new light is thrown on the problem by the researches of Dr. Embly, of Melbourne Hospital, which have been reported at length in the *British Medical Journal*. This expert claims that chloroform affects the heart in two different ways at once, at least in the beginning. There is partial paralysis of the heart muscle, in consequence of which the blood-pressure falls off, and sometimes there is a cessation of breathing. Simultaneously, the vagus nerve experiences a temporary excitement or irritability. This condition of things does not stimulate but depresses the heart as long as it lasts. This second effect fortunately is not as a rule lasting and gradually passes off. Only one influence then operates. The lesson which Dr. Embly draws is that great caution should be shown at the commencement. He thinks that only one per cent of the vapor breathed by the patient at the outset should come from the chloroform, and the rest should be air. Not more than five per cent of chloroform vapor should be ad-

ministered at any time. I know, however, of no mechanical device for accurately measuring the amount given. One must learn from experience to give just the right amount.

Concerning shock, whether it be due to the operation or to an overdose of the anesthetic, there are two opinions. Mummery and Crile maintain that lowered arterial blood-pressure in shock is due to a dilatation of arterioles throughout the body. The splanchnic veins are enlarged, so with a diminished carotid there is a raised portal pressure. Malcolm and many others uphold the view that in shock there is a contraction of arterioles throughout the body. In shock there is no evidence of constriction passing into dilatation, such as flushing of the body surface. The thready pulse, coldness and pallor of the surface, and little bleedings from wounds indicate constriction rather than dilatation of the arterioles. Mummery's definition of shock is the condition resulting from a fall in the general blood-pressure, due to exhaustion of the vasomotor centers. Malcolm's definition would appear to be a condition resulting from a fall of systemic blood-pressure due to a general contraction of the arterial system from overstimulation of the vasomotor centers. You may take your choice of these two theories. Heart failure is not likely to occur if the respiration continues good, unless there has been an excessive loss of blood or the viscera have been exposed for a long time. If the pulse wavers, becoming decidedly weak, an intravenous injection of normal salt solution may be necessary. If death seems imminent, three or four syringefuls of ether may be injected, but only as a last resort when the situation is very urgent.

A common accident is swallowing the tongue. When this is encountered, put down bottle and mask at once and raise the chin of the patient by placing a thumb on each side of the face above the angle of the jaw and three fingers on the neck below the angle, pulling upward and forward so that the larynx will be straightened and the tongue drawn forward out of the pharynx. Never use a tongue forceps if it is possible to avoid it. When the case is extreme, wrap a finger hastily with gauze, insert it into the throat, and unroll the tongue.

Stoppage of respiration is perhaps the most dangerous of accidents, when chloroform is given. When too much has been given the patient turns livid from imperfect oxidation and ceases breathing. Artificial respiration must at once be begun, the head lowered and jaw raised. Vomiting sometimes gives one considerable trouble, if the patient has eaten within six or eight hours of the operation. When it occurs the head should be turned to one side and the shoulder raised so as to permit of ejection of stomach contents. The use of adrenalin subcutaneously, in shock, has the sanction of most surgeons. Crile, however, says that adrenalin is of no benefit unless used intravenously. Strychnine is now being condemned by some, on the principle that a jaded horse should not be goaded. I can only say that we must still, in a measure, follow the dictates of experience, and that both are being used hypodermically by most operators. If the patient becomes cyanotic, or if the operation has been prolonged, I give oxygen; and it is administered by attaching a soft catheter to the rubber tube leading from the oxygen retort by means of a glass tube, the catheter being passed through the nostril to the pharynx. This is an excellent method, as it helps to keep the tongue from falling backward and is easily kept in place, while still continuing the anesthetic. This procedure is, I believe, original with Dr. Pearson, of Buffalo, N. Y.

Chloroform is more dangerous than ether, especially for the inexperienced anesthetist. It is impossible to get accurate statistics as to mortality, but it has been estimated that chloroform causes one death in about every twenty-five hundred cases, while ether causes one death in about every eight thousand. Keen says that some of the more recent experiments seem to show that the assumption that ether is more irritating than chloroform to the kidneys is

untrue. This opinion is now sustained by other investigators.

And lastly, concerning the preliminary use of morphine and atropine. Many operators are in favor of their use, because they allay fear in the beginning of the anesthesia, because the stage of excitement is almost entirely eliminated, and because extra secretion of mucus is avoided, also the tendency to nausea. These are some of the advantages claimed for their use. But others are strongly opposed to them. Dr. Kane, who has had a very extensive experience in surgery and anesthetics, objects to their preliminary use, and has very positive opinions on the subject. I asked him for his conclusions, and I give them as they were given to me:

"*Morphine* is dangerous chiefly because it diminishes or abolishes all reflex irritability—our last and only hope in anesthesia narcosis. It increases, in many individuals, the postoperative vomiting; it masks symptoms during operation. It increases the tendency to lung complications by producing pulmonary congestion. It prevents the patient coughing up mucus collecting in the throat during operation, and should vomiting occur, no effort can be provoked in patient to eject the vomitus, which falls back into the trachea.

"Intestinal paresis is increased by morphine; this is a serious objection in laparotomies.

"One should withhold morphine until after operation, and then be guided by conditions as to its indication or contraindication.

"*Atropine* checks nasal, buccal, and pharyngeal and bronchial secretion, thus rendering unprotected sensitive surfaces from the irritation of the anesthetic. There follows a reactionary secretion, a tough, tenacious mucus which increases the tendency to pneumonia. The increased surface temperature evidenced by surface congestion produces reduction of internal body temperature through radiation, thus lowering vital activity and demanding greater strain upon the heat center. By checking sweating a strain is thrown upon the kidneys at the time they are least able to stand it.

"The hemostasis induced by atropine during operation is deceptive to the surgeon, and is followed after operation by a reactionary oozing. The tenacious mucus formed in the throat after atropine causes faucial irritation, productive of vomiting as well as annoying hawking and cough."

I have failed to find clinical evidence that atropine is a respiratory stimulant or that it lessens the tendency of morphine to cause vomiting (a medical fable). We must consider the ensemble of the entire case, and not merely an easy anesthesia. In other words, all medication, every procedure, should aim at the welfare of the patient before, during, and after the operation, and an ultimate complete success in a restoration to health.

After-treatment, in regard to ice, water, phenol and peppermint water, champagne, etc., for postanesthetic vomiting and thirst, is to be remembered. In secondary vomiting, occurring two or three days after operation, and often supposed to be due to bowel toxemia, the condition is due in 90 per cent of cases to acetonuria. Full doses of sodium bicarbonate with laxatives will usually give relief.

It is only through long experience, and almost daily practice, that the anesthetist acquires the ability to instinctively anticipate the accidents and changes in the patient's condition in time to forestall them. This he is able to do, if he is a close observer, and adapted to his work. The status, also, of the anesthetist has been changed. The surgeon no longer issues his commands gruffly, as has been the practice somewhat in the past with internes, but recognizing that the anesthetist's responsibility is next to his in importance, courtesy has taken the place of criticism, and request the place of peremptory command.

EDITORIAL.

QUININE HYPODERMICALLY AND TETANUS.

Within recent years we have called attention in the THERAPEUTIC GAZETTE to the fact that intramuscular injections of quinine were being largely employed by medical practitioners in India for the purpose of preventing and combating infection by the malarial parasite, the chief advantage claimed by the advocates of this method being that absorption is sure, the dose which is efficient is smaller than that commonly given by the mouth, and that the action of the drug is much more rapidly manifested. Practically all of these clinicians insist that the method is not sufficiently painful to be objectionable. For the prevention of abscess rigid antisepsis is required. The injection must be into the belly of a muscle and not in the subcutaneous tissues, since in the muscle it gives less pain, is more promptly absorbed, and abscess is less prone to occur.

Recently the bimuriate of quinine and urea has been very largely employed as a local application, and still more commonly as a hypodermic injection for the purpose of producing local anesthesia, so that minor operations could be performed without pain, the claim being made that this preparation is efficient, that it is not followed by ill effects, local or general, and, furthermore, that it possesses none of the dangers of cocaine when that drug is given hypodermically.

A number of clinical observers have reported instances of tetanus developing after major or minor operations, in cases in which no opportunity for infection by another cause than quinine could be discovered. These seemingly inexplicable infections with the bacillus have, however, been explained, in part at least, by the discovery that tetanus spores are sometimes found in the healthy alimentary canal of man, and if, perchance, there occurs a solution of continuity in the mucous membrane of the intestine, autoinfection of a traumatic or surgical wound may result. Possibly this explains the development of tetanus in some cases which have been operated on for hemorrhoids, and it certainly has an interesting bearing upon the safety and value of quinine when given by the hypodermic needle, either for the purpose of producing local anesthesia or to overcome the malarial parasite.

A very interesting communication on this subject is made to the *Indian Medical Gazette* of Calcutta for December, 1911, by Sir David Semple, who severely criticizes an article by Major Smith, of the Indian Medical Service, contributed to the same journal for September, 1911, chiefly in respect to the danger of quinine, when given hypodermically, and as to the efficiency of small doses. In the personalities of this article we have no interest, but its practical bearings are of the greatest possible importance. First, Semple points out a fact, which we believe is not generally known, to the effect that if a solution of quinine is boiled, it undergoes deleterious change in a very short time. That this occurs is easily proved by boiling such a solution, for however clear it may be before boiling, it is usually opaque on cooling. Therefore the therapeutic efficiency of quinine is diminished by this method of sterilization. Again, Semple believes, and he seems to be correct in his view, that the period of boiling for from one to three minutes is entirely inadequate to sterilize quinine so far as tetanus spores are concerned, since, as is well known, the researches of Theobald Smith have shown that the spores of some strains of tetanus resist boiling for as long as from forty to seventy minutes. Manifestly, before this time is up the quinine will have been decomposed, and the small quantity of water in which the quinine is dissolved will have disappeared.

Experiments made by Semple upon guinea-pigs seem to prove pretty conclusively that the deterioration of quinine by

boiling is not only chemical but that it materially impairs its therapeutic efficiency, because boiled quinine injected into guinea-pigs, in doses which were sufficient to produce death if the quinine was not boiled, fails to cause a lethal result.

Of even greater interest is the question of the relationship between quinine and the development of tetanus. It seems to be pretty well proved that quinine produces some change in the tissues which renders them a singularly favorable site for the growth of the tetanus bacillus. It is not the damage to the tissues produced by the injection, because a hypodermic injection of morphine does not produce similar results. The point is, therefore, not so much that the quinine solution actually contains tetanus bacilli, but rather that the quinine predisposes to infection if the germ is present in the body. That the quinine does increase the susceptibility of the tissues to this form of infection seems to be proved by some of Semple's experiments, although it also seems to be proved that quinine itself acts deleteriously upon this organism.

So far as the rapid absorption of quinine from the tissues is concerned, Semple asserts that autopsies have frequently revealed the salt unabsorbed in the tissues where it was deposited by the needle.

Notwithstanding these somewhat alarming propositions advanced by Semple, it is only fair to recall the fact that tetanus following the injection of quinine must be an exceedingly rare occurrence, since there are almost no reports concerning it in the medical literature which deals with this use of quinine in the temperate zone. Indeed, in India, where tetanus is more prevalent, this accident following an injection of quinine is not commonly met with. It will be interesting to note whether the wide-spread use of quinine hypodermically as a local anesthetic results in such cases being reported in America.

Concerning the question as to whether the physician should resort to quinine by the hypodermic needle in malarial fever, we think that the answer is that this plan should be avoided unless the need for the immediate action of quinine is pressing. Perhaps, after all, Sir David's statement in regard to this matter represents the position which clinicians should generally hold, when he says: "I should certainly not recommend any one to withhold a hypodermic injection of quinine from any case where it is indicated, but, on the other hand, I should be very sorry to recommend this method of quinine as a routine measure in all cases. I should confine myself to the exceptional cases in which quinine by this method is indicated, and these I should safeguard by a dose of tetanus antitoxin, especially in those localities of tropical countries where tetanus frequently occurs."

THE EFFICIENCY OF URINARY ANTISEPTICS.

One of the advances made in therapeutics during the last two decades has been the introduction into medicine of one or more substances which comparatively harmless to the body of the patient nevertheless inhibit the growth of pathogenic organisms which may have invaded that body. The most important of these, aside from the specific remedy, salvarsan, is without doubt hexamethylenamin, commonly called urotropin or uritone. Considerable divergence of opinion has existed as to the manner in which it acts as an antiseptic in the genito-urinary tract. It is commonly believed that the drug is decomposed in the kidneys, or in the urine as soon as it is excreted, and that formaldehyde is set free, which acts as formaldehyde, or combines with any sodium which may be present forming a sodium compound. Cammidge asserted that he failed to find formaldehyde in the urine, and reached the conclusion that the antiseptic effects were produced in some other manner, but his results have not been generally accepted. Perhaps the best summary which has been made of this subject is that of Guiard, which was published in the *An-*

nales des Maladies Génito-urinaires in 1905.

The most recent investigation on this subject with which we are familiar is one which has been reported by Jordan in the *Proceedings of the Royal Society of Medicine* in the section devoted to Therapeutics. The doses that he employed were 10 grains three times a day either alone or in conjunction with acid sodium phosphate or potassium citrate. He found when pathogenic organisms were present that the disinfectant or germicidal influence of urotropin amounted to little or nothing if the urine was alkaline or faintly acid, but became very powerful if the urine was rendered distinctly acid by the simultaneous administration of acid sodium phosphate. Conversely, that the simultaneous use of potassium citrate, whereby the urine was made alkaline, diminished the antiseptic power of urotropin. It would seem probable, however, that this rule does not apply to those cases in which the colon bacillus is the cause of the genito-urinary infection. Indeed, it is possible that urotropin does best in this infection when the urine is alkaline, possibly because an alkaline urine is less favorable to the growth of the colon bacillus than is the urine with an acid reaction. For many years it has been known to practical therapeutists that urotropin does best in cases of vesical irritation and inflammation, not dependent upon distinct infection, when the urine is alkaline and loaded with phosphates, since it tends to make the urine acid; and, conversely, it may increase bladder irritability if the urine is excessively acid. The conclusion to be drawn would seem to be that it is important in the treatment of these cases, first, to determine whether the trouble is dependent upon the presence of an infecting organism, then to determine the reaction of the urine, and if it be alkaline to administer acid sodium phosphate, or perchance bitartrate of potash, to increase the urinary acidity if ordinary pathogenic germs are present.

In regard to the influence of other so-called urinary antiseptics Jordan states that sandalwood oil, which is partly excreted unchanged and partly as a compound of glycuronic acid, has been considered by some as an antiseptic, while others have regarded it as an astringent to the genito-urinary mucous membrane. Jordan believes that this so-called astringent influence is purely imaginary, since none of the essential oils possess such powers. He found that against the microörganisms of putrefaction its action is feeble, and when the urine is alkaline when it is administered putrefaction occurred as rapidly as if it were not given. When the urine is acid it diminishes the development of putrefaction one-half, but does not stop it entirely. He also found that the colon bacillus is unaffected in all instances when sandalwood oil is given; whereas, if the staphylococcus is the microörganism involved, it acts as a powerful antiseptic, delaying the growth of this organism to six or seven times the normal period. In moderately acid urine ammoniacal change does not develop for nine days, and in highly acid urine microorganisms are scarcely growing at the end of a fortnight. In other words, sandalwood oil, although an antiseptic, so far as the staphylococcus is concerned, is of little value against the bacillus coli or the organisms of putrefaction.

Concerning the influence of salicylic acid, given in doses of 20 grains three times a day, he found that it distinctly delays putrefaction so that ammoniacal fermentation does not occur until three times the period in which it ordinarily ensues. It seems to slightly inhibit the growth of the staphylococcus and of the bacillus coli, but at no time has it been seen that its action is very positive.

Concerning the influence of benzoic acid and ammonium benzoate, Jordan found that there is an increase in the antiseptic power if the urine is highly acid, but he questions whether this result is not due more to the acidity than to the influence of the drug. Jordan believes that 10 grains three times a day is adequate to produce an

effect, and that larger doses are practically useless.

In the discussion of Jordan's paper Sachs brought forward the question as to whether the seeming effect of urinary antiseptics upon the bacillus coli in alkaline urine was not due rather to the reaction of the urine than to the drug. In other words, he thought that alkaline urine was unfavorable to the growth of bacillus coli. Jordan controverted this view by the assertion that bacillus coli grows in alkaline urine very well. On the other hand, he is forced to admit that the administration of potassium citrate often does good when the colon bacillus is present. He thinks it a mistake, however, in these cases to give urotropin at the same time, as he believes that these drugs, whatever their isolated effect may be, do not act on the colon bacillus if given together. He also brought forward the point that occasionally it was wise to change the urinary antiseptic used, since it seemed at times that the organism became accustomed to one drug, and the change produces a good effect by exercising a new influence.

ACUTE ARTHRITIS.

The development of bacterial research is showing us more and more that, in the majority of instances, acute inflammation of the joints is due to one or more infecting microörganisms, and that rheumatism in the sense of acute articular rheumatism, which years ago was credited as a cause of every arthritis, is present far less frequently than some of us imagine even at this late day. Indeed, it is wise, as a rule, to approach the case of single or multiple arthritis from the standpoint that it is not acute rheumatism, since by this means we will prevent ourselves from overlooking other causes of joint inflammation which are much more serious in their results. Joints infected by the gonococcus, the pneumococcus, and the various forms of ordinary pus-producing organisms are by no means rare, and if they are not speedily treated in a correct manner may result in destruction of the joint. Hale White has contributed an interesting clinical lecture on this subject to the *Clinical Journal* of February 21, 1912. He points out that in gonorrheal arthritis the onset may be quite as sharp and acute as in ordinary articular rheumatism, and that such an arthritis may develop in men and women whose morals seem to be entirely beyond reproach. We should not forget that osteomyelitis is not rarely mistaken for acute articular rheumatism, for this mistake leads to the loss of the limb, and not infrequently to the loss of life. Such conditions demand surgical interference, and not the persistent and blind administration of the salicylates on the ground that the patient is rheumatic.

In connection with gonorrheal rheumatism it is important to remember that the ordinary paths of entrance for the gonococcus are not necessarily infected, as gonorrheal arthritis may develop from a gonorrheal ophthalmia, and even in ophthalmia neonatorum. In some instances, too, an acute infection by the pneumococcus attacks the joints first and the lung afterward, which is not surprising when we remember that pneumonia is really a systemic disease, although its most common local manifestation is in the lung.

TREATMENT OF STAB WOUNDS OF THE THORAX.

Concerning this question there is by no means a united opinion on the part of clinical surgeons. Perhaps the majority favor conservatism unless there be continued or recurring bleeding and evident involvement of the diaphragm or abdominal contents or infection, the latter being the main cause of death in cases which survive the immediate effects of trauma.

Lawrow (*Beitrage zur Klinischen Chirurgie,* 76 Bd., 3 H., 1911) on the basis of 257 cases observed in the years 1905 to 1909 inclusive concludes that in the great

majority of penetrating wounds of the chest, the diaphragm and abdominal organs, the heart and pericardium and the blood-vessels of the thorax are involved, all these complications calling for immediate treatment.

In 155 cases operated upon, 78 per cent exhibited lesions of the inner organs: diaphragm, 35.4 per cent; heart and pericardium, 9 per cent; lungs, 27.7 per cent; and the vessels of the thoracic wall, 6.4 per cent. Lesions of the mediastinum and isolated pleural lesions were observed in 22 per cent.

Lawrow holds that every case of stab wound seen within twelve hours of its infliction, with the exception of those in the region of the shoulder-blade and between the scapulas, should be carefully enlarged and deepened in order to determine whether there are visceral complications. Even in the excepted cases operation is indicated in the presence of urgent symptoms, such as bleeding, pneumothorax, and evidences of peritoneal involvement. The purpose of enlarging the external wound is not primarily and principally to find and close a wound of the lung, but rather to determine whether or not the diaphragm, the heart, or the pericardium has been injured, since a failure to recognize such lesions may lead to most serious consequences, and exact diagnosis without exploration is impossible. The suture of a wounded lung is of distinctly secondary importance. From the standpoint of the extreme sensitiveness of the pleura to infection, the most rigid asepsis is indicated.

Lawrow gives certain mortality figures which he particularly states are not to be compared one with the other, since the cases selected for conservative and for operative treatment are widely different. In upwards of the two hundred and fifty cases observed the mortality of those operated upon was 36.7 per cent; of those not operated upon, 14.7 per cent.

It is evident that no rule of general application can be laid down concerning the management of these cases. Except when the conditions are most favorable for absolute cleanliness, and when a surgeon of some experience in thoracic surgery is available, it is probable that a conservative treatment will give the best results in the absence of continued hemorrhage or evidences of complicating intra-abdominal injury with extravasation of intestinal contents.

THE TREATMENT OF TRAUMATIC ANEURISM.

The work of Matas upon the treatment of aneurism, based on a careful pathological and experimental study and amply confirmed by a large clinical experience at his own hands and at those of many operators, has, in its findings, now received general acceptation. His methods are probably employed in every modern hospital, with a marked lessening of the percentages of failure and of gangrene, which were distressingly high after the older forms of surgical intervention.

It is interesting to note in this relation a report of traumatic aneurisms and their surgical treatment as observed in the course of the Russo-Japanese war and thereafter. Herzen (quoted in *Journal de Chirurgie,* December, 1911) records in all over 130 of these lesions, and makes the general statement that in case of gunshot wound of blood-vessels, barring the immediate indication for checking hemorrhage, formal intervention is contraindicated. When aneurism develops he believes that the best time for intervention is about six weeks after the primary injury.

For the treatment of arterial aneurisms he prefers ablation of the sac, particularly cautioning in regard to cleanliness, since infection, by preventing collateral circulation, almost certainly will prevent favorable results. Moreover, he commends the ligation of the corresponding vein at the time that the artery is secured.

Of the aneurisms observed the greatest number involved the femoral artery. There-

after follow the brachial, the popliteal, the axillary, the common carotid, and the profunda femoris.

As to the results, there were 21 cases subjected to non-operative treatment; of these four were cured, nine were bettered, six were not improved, and two died. Twenty cases were subjected to ligation in continuity at a distance from the aneurism; of these 13 were bettered, one was not improved, three suffered from gangrene, and three died. Sixteen were ligated just above the aneurism; thirteen of these were cured, one was bettered, and one died. A double ligature was applied to eight; five were cured, two were bettered, and one died. Twelve were subjected to intrasaccular ligation with resection of the artery; seven were cured, two developed gangrene, and three died. In 31 the sac was resected; 25 were cured, five exhibited gangrene, and one died. Three were sutured; one was cured, one developed gangrene, and one died. Of arteriovenous aneurisms there were 75, the greater number involving the femoral and popliteal. The operation practiced was a cleanly resection. Attention is called to the fact that these arteriovenous aneurisms sometimes recover spontaneously and that they may last for many years without producing much trouble, this being particularly true of the axillary vessels. Of these arteriovenous aneurisms 32 were resected, with 28 cures, three gangrenes, and one death. Four were sutured, with one cure, two gangrenes, and one death.

It is suggested both by Herzen's clinical reports and by his results that he is not familiar with the more recent work on vascular surgery. It is generally accepted and has been abundantly proven by clinical experience that simultaneous occlusion of both an artery and a vein is far more likely to be followed by gangrene than when an artery alone is occluded. A simple venous closure is practically without danger in so far as death of peripheral parts is concerned. Until the possibilities of conservative work were enlarged by the development of vascular suture it was the general practice upon the part of experienced surgeons when, for instance, the popliteal vein and artery were both wounded to practice an immediate amputation.

To one who has ever practiced both methods the superiority of Matas's intravascular suture for the obliteration of an aneurismal sac over the removal of the sac by dissection, both from the standpoint of ease of performance and safety in results, is convincing. By this method the integrity of the vein is not endangered. The removal of the sac by dissection, even when done by most skilful hands, is always tedious and is extremely likely to so injure the vein that its ligature or suture is called for. In many cases, by Matas's method of suture, the sac may be obliterated and the continuity of the arterial circulation may be maintained, unless clots subsequently form from rough manipulation or pre-existing disease; thus entirely avoiding the risk of gangrene. The suture is equally applicable to the arteriovenous aneurisms, and indeed other methods are rarely required unless the aneurism be so placed that control of hemorrhage during arteriorrhaphy is impossible.

REPORTS ON THERAPEUTIC PROGRESS.

HYPOADRENIA AS A CAUSE OF DEATH IN INFECTIONS AND ITS TREATMENT.

SAJOUS, in the *Monthly Cyclopedia and Medical Bulletin* for December, 1911, states that if at the end of an infectious disease the case, instead of proceeding to convalescence, remains in a condition of asthenia, with low blood-pressure and temperature, there is good ground for the conclusion that terminal hypoadrenia has occurred. Exhaustion of the adrenals during the acute process having inhibited their secretory activity, the above symptoms result from inadequate oxidation of, and metabolic activity in, the tissues. Sergent's white line may be obtained in the majority of these cases. It is elicited by gently rubbing the finger in a narrow line over any part of the abdomen. After a short period the area becomes whitish, and remains so a short time. The patient complains of chilliness; the surface is pale, owing to the poverty of the blood in cellular elements and hemoglobin and to recession of the blood-mass from the surface to the deeper vascular trunks. The vascular tension being low, the pulse is rapid and the heart-beat weak. Anorexia due to deficient metabolism and diminished food intake, nausea the result of relaxation of the gastric muscular coat, and diarrhea due to a similar condition of the muscular coat of the (already passively engorged) intestine, more or less frequent fainting spells, are all concomitant symptoms that may be witnessed in such cases, which are always greatly exposed to relapse or to sudden death from heart failure.

Complications of various kinds may occur, the immunizing processes being greatly weakened through the deficiency of adrenal secretion, one of their important factors. Septic infection, abscesses, bone lesions, tuberculosis of a rapid type, and other infections may develop more or less rapidly. Disorders of nutrition, cholelithiasis, and occasionally Addison's disease may also appear. In acute pulmonary infections, pneumonia, for example, structures in the neighborhood of the focus of infection, the pleura, the heart, etc., inadequately protected by the blood and its phagocytic cells, become the prey of specific bacteria. Briefly, the body is rendered vulnerable to the attacks of almost any pathogenic organism.

In this particular disturbance, opotherapy, or rather the use of adrenal gland, or of pituitary body—which acts very similarly, but with less violence and more lasting effects—sometimes gives surprising results. The adrenal product—which from the author's view-point is also the main active agent in the neural lobe of the pituitary, as shown by the chromaffin test—insures precisely what the body needs, viz., the resumption of all oxidation processes, and also, therefore, general metabolism and nutrition. This in turn creates a rise of blood-pressure, which causes the blood to circulate in all organs, including the skin, and in the adrenals themselves. Indirect effects are also obtained: The action of the adrenal principle on the heart increases the contractile power of this organ, and since it is thus rendered capable of projecting the blood with greater vigor through the lungs, oxygenation of the blood becomes more perfect. Recovery is also materially aided by the rise of blood-pressure which the adrenal product insures, and which causes arterial blood to be driven from the splanchnic area toward the peripheral organs, including the lungs and brain. From these features alone considerable benefit is derived. If we recall, moreover, the participation of the adrenal secretion (which the adrenal preparation administered represents) in the immunizing process, we have the added factors of ridding the blood of any intermediate—and, therefore, toxic—wastes, bacterial toxins, etc., it may contain, and of increasing phagocytic activity, thus antagonizing efficiently any pathogenic organism that may remain to compromise

the issue. Thus explained, we can understand the phrase "little short of marvelous" applied to the results obtained by some clinicians. We can also understand the marked reduction in the mortality obtained by Hoddick in cases of peritonitis following appendicitis accompanied by uncontrollable decline of the blood-pressure, cyanosis, and other evidences of collapse, and also in puerperal toxemias, by the slow intravenous use of adrenalin in saline solution.

Hoddick ascribes the lowering of the blood-pressure to paralysis of the vasomotor center; but as the toxemia is the cause of this condition, an agent capable of counteracting both cause and effect is necessary. This is met by the adrenal principle. Josué, in typhoid fever, likewise relieved threatening symptoms by injecting 15 minims (1 Cc.) of adrenalin (1:1000 solution) in ½ to 1 pint (250 to 500 Cc.) of physiological saline solution subcutaneously. The influence of the saline solution in these cases must not be overlooked, however. Eight years ago the author urged that death was often due, in infectious and septic diseases, to the fact that the osmotic properties of the blood became deficient, and advised the use of saline solution from the onset of the disease. The reduction in the mortality of pneumonia in the practice of men who have carried out this suggestion has demonstrated its value. Netter has used much larger doses of the adrenal active principle with profit. Marran and Darré found it of great value in the collapse of diphtheria with marked asthenia, low blood-pressure, and subnormal temperature. Moizard recommends adrenal organotherapy as soon as asthenia and low blood-pressure occur in any infection. He gives daily two fresh adrenals from the sheep, finely divided and mixed with powdered sugar, or administers the active principle, 10 to 20 drops daily divided into five or six doses. Kirchheim has found large doses—10 to 24 minims—safe hypodermically in the collapse of pneumonia, diphtheria, and scarlet fever. Letulle has found the principle of great value in the latter disease. The better plan, from the author's viewpoint, is to inject it with saline solution (at 108° F.) intravenously, the needle of the syringe containing the adrenalin being inserted into the rubber tube of the saline solution apparatus.

These measures are only indicated in emergency cases, however. In the average case the glandulæ suprarenales siccæ of the United States Pharmacopœia, administered by the mouth, are fully as effective, if a good preparation is obtained, as soon as asthenia and low blood-pressure appear. The powder in 3-grain (0.2 Gm.) doses three times daily in capsules, gradually increased until 5 grains are given at each dose, usually suffices. When the cardiac adynamia disappears, a small dose of thyroid, the desiccated gland, ½ grain (0.03 Gm.), added to each capsule greatly hastens convalescence. The iron and the adrenal product serve jointly to build up the hemoglobin molecule, a slow process when left to itself.

For our knowledge of the action and use of pituitary extracts in infectious diseases we are mainly indebted to L. Rénon and Delille, who began their use in 1907. In a recent work in which the clinical observations of both observers are recorded Delille, referring to grave cases of typhoid fever, states that they showed "arterial hypotension, irregularity of the pulse (especially the grave forms), oliguria, insomnia; while convalescents showed asthenia, hypotension, or at least 'effort hypotension' (Oddo and M. Achard), paroxysmal or continuous tachycardia"—all, we have seen, symptoms of hypoadrenia or adrenal insufficiency. They found 1½ grains of pituitary extract (of both lobes), at noon daily, extremely efficient. It counteracted at once the depressed arterial tension, produced diuresis, overcame insomnia, and greatly improved the general condition. Similar effects were observed in diphtheria and erysipelas. The results in pneumonia do not appear to warrant the use of any adrenal or pituitary preparations early in the case—the first few days of the disease, when the blood-pressure and the fever are

high. They should be used only when a low blood-pressure and other symptoms of hypoadrenia are present. The results reported by Delille strengthen this opinion. In advanced tuberculosis no beneficial effect was observed.

THE DETERMINATION OF INDIVIDUAL DOSAGE IN TUBERCULIN THERAPY.

WHITE and VAN NORMAN in the *Archives of Internal Medicine* of January 19, 1912, reach the following conclusions:

1. It is possible by testing the sensitiveness to tuberculin of the surface cells of a tuberculous patient to determine the quantity of tuberculin which, when given subcutaneously, will produce a certain grade of reaction.

2. It is possible to obtain the same grade of reaction in any given number of patients, even though the quantity of tuberculin to produce this reaction varies and the condition of the patient varies.

3. The variation in the quantity of tuberculin necessary to produce the same grade of reaction in all cases is one hundred times.

4. It is not possible to determine by the extent of disease, age, or condition of the patient the principle underlying this variation.

5. The administration of tuberculin in doses which produce these mild (local) reactions has given the best results of any method of tuberculin therapy which they have used.

THE PURIN CONTENT OF COMMON ARTICLES OF FOOD.

ARNOLD and LARRABEE in the *Journal of the American Medical Association* of January 6, 1912, remind us that exogenous purins come essentially from two sources—from the nuclei of cells in the food, and from free purins (chiefly hypoxanthin) found in muscular tissue. The chief sources are animal foods, and these are rich in purins in proportion to the number of nuclei in a given amount of the tissue. For example, glandular organs are much richer than muscle.

Of animal foods, milk and eggs, and all articles made from them, are essentially purin-free. Fish eggs are included in this list. Cheese may include an appreciable amount of purin, if rich in bacteria.

Usually all vegetables are permissible, being practically purin-free. Seeds, however, contain a certain amount of purins in the plant embryos. In extreme cases, therefore, the use of peas, beans, corn, wheat, and oats may need to be restricted or even excluded. It should be noted, however, that such objections as there may be to these seeds do not apply to flours made from them, for the process of bolting the flour removes the plant embryos.

In this connection caffeine and theobromine may be mentioned. Each contains a form of purin, but they are methyl-purins. The methyl radical is much the more active, and the amounts of these substances taken would be limited by the methyl action long before the action of the purins would become objectionable. These purins may be practically disregarded in our consideration of the subject.

These, as we have seen, are chiefly animal foods containing cells, and they are rich in proportion to the number of cells in a given amount of food.

Our knowledge of the purins and the rôle they play in the body is not sufficiently accurate to make it worth while to try to calculate the exact amount taken in a given quantity of food, so that the exact percentage has little practical value. On the other hand, the relative amount in different foods has a practical value. This can be expressed conveniently by taking as a unit the amount of purins in a given weight of any food that is relatively poor in purins, and then classifying other foods as containing multiples of that unit.

A satisfactory method is to compare the foods according to the number of grammes of purins in a kilogramme of the food. Cod may be taken as the standard to determine our unit. Their figures are taken from I. Walker Hall. There are 0.582 of

purins in 1 kg. of cod, so that our unit may be placed at 0.5 gm. per kilo. The common foods will be classed in groups having approximately the same amount of purins, and in each group they will be arranged from above down, beginning with the lowest of the group and ending with the highest.

It will be noted that there is no difference chemically between the "red" and the "white" meats. Also note that while the common forms of white fish like cod are low in purins, other fish, like halibut and salmon, are as rich as the common meats.

Purin Content of Animal Foods.

1 unit.	Tripe.	2½ units.	Turkey.
	COD.		Chicken.
			Beef (sirloin).
1½ units.	Plaice.		
		4 units.	Beefsteak.
2 units.	Mutton.		
	Rabbit.		
	Halibut.		
	Pork.	6 units.	Liver.
	Beef (ribs).		
	Ham.		
	Veal.	20 units.	Sweetbreads
	Salmon.		(thymus).

Purin Content of Vegetable Foods (containing more than a trace).

Two-fifths unit	Asparagus.
Four-fifths unit	Pea-meal.
One unit	Oatmeal.
Six-fifths unit	Beans.

Sweetbreads and liver must be omitted from the diet entirely whenever it is desired to limit the amount of purins ingested, and beefsteak should be used in only half the amounts that other meats are allowed. Boiling meats reduces the amount of purins, as it removes a good deal of the soluble xanthin bases, whereas these are all retained when the meat is broiled.

The method of dealing with a patient who needs to have the purins restricted would be, first, to put the patient on a purin-free diet of milk, eggs, bread, and vegetables for a number of days, in order that he may rid his system of any excess of purins that are retained in the system. Then we may test his tolerance by beginning with an allowance once a day of a moderate serving of one of the articles from the table above that is rather poor in purin—that is, an article that relatively has not more than two cod units. The amount should not exceed 100 grammes. If these lower substances are well borne, then we may try the stronger ones, but we should begin with smaller amounts, not over 50 grammes at the start. These stronger articles should not be put on the regular bill of fare, but only allowed occasionally, even if there are no apparent symptoms from their occasional use.

A good word may be added about beverages. Tea and coffee may be used in moderation, if not otherwise objectionable. In general, alcohol inhibits purin metabolism. This is the objection to alcoholic drinks, rather than any question of their purin content. Beer, ale, and porter contain small amounts of purin. Spirits contain none. Light wines usually agree best with gouty patients, but there is no definite rule as to the way in which gouty patients are affected by different alcoholic drinks.

One final word of caution should be added. Gout is a variable disease. Each case has its idiosyncrasies and its peculiar problems. Treatment must be individualized, and the general principles laid down may need considerable modification to meet these individual requirements. Nevertheless, the intelligent regulation of the diet so as to meet the needs of the body for nutrition and yet to limit the amount of purin ingested will remain a cardinal principle of treatment.

THE TREATMENT OF INTESTINAL AMEBIASIS.

MUSGRAVE in the *Journal of the American Medical Association* of January 6, 1912, states that local treatment by bowel irrigation, either alone or combined with some other form of medication, gives the most satisfactory results in the majority of cases of amebiasis. To secure the maximum of efficiency this form of therapeutics requires special attention to certain details, particularly to (*a*) the manner and time of giving the enema; (*b*) the solution to be used.

In former publications the author has recommended the use of the long rectal tube to be employed with the patient in the left lateral (Sims) position. The experimental work of a number of investigators

has proved the futility of trying to pass a long rectal tube through the sigmoid colon, and the same line of experiments, of showing the course of rectal tubes and fluids introduced by them by radiographic work with bismuth emulsions, has shown conclusively that no such special effort is required in order to get enemas to reach all parts of the large bowel from rectum to cecum. Indeed, it has been shown that the entire large bowel is easy of access by any form of enema provided sufficient quantity of fluid is used. In view of these results, the long one- and two-meter rectal tubes, formerly recommended and generally used in Manila, have been practically abandoned for the ordinary large-sized male rubber catheter which may be attached to an ordinary two- or three-liter irrigator, preferably made of glass.

In order to secure the best results from any form of rectal medication, the bowel must be distended by substances employed. This object may be accomplished by using large amounts of fluid, and the result is materially influenced by the position of the patient and to a less extent by the condition of the lumen of the bowel at the time of the treatment.

The bowel capacity varies greatly in different individuals, owing to variations in actual size of the organ and particularly to its resistance to the introduction of foreign substances. Ordinarily, with proper care, from two to three liters of fluid may be used, but in many instances, particularly in women, as much as four liters of fluid may be introduced without any special discomfort to the patient. In those cases in which less than two liters of fluid can be taken, the condition may be assumed to be due to contraction of the bowel wall, and if the best results are to be obtained special preparatory treatment looking to an amelioration of the influence must be employed. Such treatment consists in a preliminary washing of the bowel, the use of sedatives, as opium in some form, or what is simpler and frequently sufficient where there are no special contraindications, the administration of 25 to 30 Cc. of brandy by mouth, ten or fifteen minutes before giving the enema. Alcohol is much less objectionable for this purpose than is opium, because of the repetition which may be necessary with each treatment until a tolerance for the enema is established, as is sure to occur under favorable conditions.

Since the appearance of Meltzer's and Shaklee's work on the physiological action of magnesium sulphate on peristalsis, this substance has been employed for the above purpose in 15- and 20-gramme doses given four to six hours before the enema, with very encouraging results. The knee-chest position undoubtedly is the best one for any form of medicated enema. The physiologic reasons for this statement are obvious, and experience has shown that in the great majority of cases a larger quantity of fluid may be taken in this manner than in the Sims position, and that it is retained with greater comfort to the patient. The only objections to the method are esthetic ones, and as patients, particularly women patients, rarely require assistance in taking such enemas after a single instruction, this objection becomes of minor importance. The bath-room floor with the patient stripped and a bath towel under knees and chest is a most satisfactory place for this treatment because of the privacy and convenience to both toilet and water; this method is one now largely practiced in Manila.

Enemas should not be given during digestion because the reversed peristalsis usually set up by such treatment interferes with the process of digestion and may aggravate stomach symptoms already present in this disease.

A very good time to take the treatment is just before retiring at night and the first thing after waking in the morning. One enema each twenty-four hours usually will be found sufficient, but in many instances two a day will give quicker and more satisfactory results. More than two treatments of this character in twenty-four hours are never indicated.

A large variety of chemicals selected largely because of their supposed amebacidal properties have been used in the

local treatment of amebiasis. As a matter of fact, very few of them are endowed with appreciable amebacidal properties, and it is an open question whether or not whatever virtue the most successful ones may have is due to their amebacidal properties.

Of the list of such substances, thymol, quinine, and silver nitrate are the three which have been proved to be of greatest value.

Thymol is by far the most efficient of the known amebacidal agents, and it has been Musgrave's main reliance in the treatment of amebiasis since its antiparasitic properties were so thoroughly demonstrated by J. B. Thomas. On account of the difficulty in getting the drug in solution in water, the following formula has been worked out and has proved to be very convenient and satisfactory.

> Thymol, 25 Gm. or Cc.;
> Alcohol,
> Glycerin, āā 250 Gm. or Cc.
>
> M. et Sig.: Add 10 Cc. to each liter of water used in enema.

This gives a finished product of approximately 1-to-2000 solution of the drug, which, when the additional dilution formed by the bowel contents is considered, brings the actual intraintestinal solution well within the antiprotozoal limits of the drug, which is very actively amebacidal in 1-to-10,000 solution.

There does not appear to be any particular choice between the various quinine salts. The bisulphate is freely soluble and well adapted for use. The drug may be used in 1-to-1000 to 1-to-500 aqueous solution, depending on the irritability of the bowel. One of the principal objections to quinine is the constitutional effects often produced by its absorption from the bowel, particularly in patients who are able to retain enemas for considerable lengths of time.

Nitrate of silver frequently proves of decided benefit in solutions of from 0.1 to 1 per cent in distilled water.

The method of action of these and various other substances frequently used in colonic lavage is not understood. Formerly the amebacidal properties were considered the most important, but careful consideration of the morbid anatomy of the disease makes this hypothesis a very doubtful one.

The parasites which are intimately associated with the lesions, and which therefore may be considered the most dangerous ones, are so buried in the tissues that there seems little likelihood of their contact with the solutions injected. These lesions are constantly discharging millions of amebæ into the lumen of the bowel, and amebacidal substances may destroy these and prevent their forming new lesions. It seems rational, however, to consider the intestinal reaction due to irritation of the bowel by the solutions as being probably more important than any direct antiparasitic property of the chemicals.

The effect of acute inflammatory conditions of the bowel on the chronic amebic process has been indicated above, and it is probable that much of the good of the local treatment, of whatever character, is in its irritating influence and consequent altered blood-supply on the mucosa of the colon. Practically all the substances of proved value in local treatment are irritants, and it is a generally recognized therapeutic fact that the prognosis of the disease is more favorable in irritable bowels than in the kind in which the enemas cause little or no pain or discomfort to the patient. Tuttle's ice-water injection often gives excellent results in the disease, but is seldom used because of the intense pain frequently produced by the severe reaction in the intestinal wall.

As is to be expected from the chronic nature and the lack of a definite specific cure for the disease, numerous so-called specifics and especially efficient methods of treatment have been proposed from time to time. Of these may be mentioned the saline treatment, the simaruba treatment, the bismuth treatment, tannin preparations of various kinds, calomel, metallic mercury, various crude tropical plants, and several patent medicines which have secured considerable indorsement.

Some of the well-known chemicals of this

list are of value in special conditions, but probably none of them are in any sense specifics, and all the rest of the remedies are useless or dangerous in the treatment of disease.

The effect of mercury salts in the treatment of amebiasis deserves further investigation. During the last year the writer has had most encouraging results from the use of the protoiodide of mercury in old sluggish diarrheal types of the disease which reacted slowly to other methods of treatment.

The drug was administered just as it would be in syphilis; tablets of 0.015 gramme each were given from two to four times a day, the quantity being determined by the tolerance of the patient, the symptoms of intestinal irritation being controlled by small doses of paregoric when necessary and the drug pushed to the point of tolerance as determined by the mouth symptoms. This treatment should be continued for one to three or more months with occasional intermissions of a few days.

GONORRHEAL RHEUMATISM.

MURRELL in the London *Practitioner* for January, 1912, has this to say as to treatment: The ordinary medical treatment of gonococcic arthritis, apart from efforts to arrest the urethral discharge, leaves much to be desired. The cases are rarely sufficiently acute to call for antiphlogistic remedies. Salicylate of sodium, salol, salicin, aspirin, and members of that group are useless. Iodide of potassium is a survival of the days when no distinction was made between gonorrhea and syphilis. Quinine and arsenic are equally without value. The ammoniated tincture of guaiacum does good in chronic rheumatism, but is inefficacious in the disease now under consideration. Local applications, mostly of the nature of counter-irritants, give relief to pain, especially when only one joint is affected. Cupping, blistering, and strapping are of value. Liniments containing aconite and belladonna or oil of eucalyptus, oil of cajuput, oil of camphor with saturated solution of soap in ether are popular remedies. A good local application consists of crude oil of camphor, oil of wintergreen, cajuput oil, and oil of mustard. F. Norman obtained good results with emplastrum ammoniaci cum hydrargyro. Another good plan is to frequently paint the joint with iodine until the skin is as thick as leather. Hot baths containing salts and various aromatic substances may be regarded as palliative rather than as curative agents.

The real treatment of the disease must be on other lines. For a long time the author made observations with antigonococcic sera in a considerable number of cases. He gave the serum in a series of 25 Cc. spread over twenty-four hours: 10 Cc. at 10 A.M., 5 Cc. in the evening, and 10 Cc. on the following morning. In some cases there was a reaction, indicated by a rise of temperature of a couple of degrees, accompanied by slight constitutional disturbance. Erythema and urticaria were noticed in several instances. When there was reason for suspecting a mixed infection a polyvalent antistreptococcic serum was employed. The results obtained by this method of treatment were not strikingly successful. He asserts he is not surprised, for antigonococcic serum is usually prepared by injecting the virus into horses, and we know that the gonococcus is a strictly human parasite and is non-pathogenic in other animals. An attempt has been made to prepare the serum from monkeys, but with little success. Inoculation of pure cultures into the urethra of the ape produced no effect, and this was also the case with true gonorrheal secretions. This absence of susceptibility to gonococcic infection may be due to the presence of natural antibodies to the organisms against which the animal is immune. Whatever may be the explanation the fact remains that the serum treatment of this form of arthritis is not a success. It is conceivable that in streptococcic cases it may do good, and it is probable that in such cases only is a reaction obtained.

The only effective method of treating gonococcic arthritis is by vaccine therapy, and that with certain reservations. The ordinary stock gonococcic vaccine is of very little value. The author recently observed a man who for many weeks had been treated on these lines without benefit, the explanation being that his gonococci had long since disappeared and had been replaced by a diphtheroid bacillus, which was the cause of the mischief. Somewhat better results are obtained by vaccine prepared from a recent alien gonococcic urethritis, but even that leaves much to be desired. These vaccines are usually composed of several strains, but the author is not in favor of this particular form of polypharmacy. As far as possible he discards alien vaccines and uses only autovaccines, for the antidote from the patient himself is of infinitely more value than a remedy obtained from an unknown source.

In some cases he has used large doses, even up to 500,000,000 every three or four days. It is said that the dose for the urethritis should be 75,000,000, for the iritis 250,000,000, and for the arthritis 500,000,000, but the author does not indorse the action of the medical man who gave an initial dose of 825,000,000. He is in accord with Hartwell, who finds that autogenous vaccines are valuable in all stages of gonococcic arthritis except when ankylosis has occurred. As a detail many patients have an objection to being inoculated with gonococci obtained from people respecting whose moral character they have no information. The author has treated many cases with alien vaccines, the doses of the injections being gradually increased from 5,000,000 to 200,000,000. The number of injections given ranged from 8 to 25, but in a chronic case this is inadequate. In three recent cases the number of days in the hospital was 67, 76, and 114, respectively. Better results are obtained by autotherapeutical inoculations; the actual organism causing the arthritis is isolated and the results are naturally more satisfactory. In a case of gonococcic arthritis of four months' duration treated with an autovaccine, the organism being a diphtheroid bacillus obtained from the urethra, the first injection of 5,000,000 was given on June 1 and was gradually increased to 50,000,000. By the end of July 20 injections had been given and the condition was cured.

Valuable as are inoculations they are not everything, and there is still scope for the ministrations of the surgeon. The author recently observed a case of gonococcic arthritis in which heterovaccines and autovaccines carried out for a long period and with the most careful attention to detail failed to effect an improvement. A surgeon was requisitioned, who by dilatation of the urethra under an anesthetic removed the focus of infection, allowing the antidotal treatment to exert its influence.

THE TREATMENT OF RHEUMATISM BY INJECTION OF MAGNESIUM SULPHATE.

The *Practitioner* for January, 1912, contains an article by JACKSON on this subject. He says the technique is very simple. The syringe he employs is the Luer, all-glass type, of five cubic centimeters capacity. All aseptic precautions must be observed in regard to syringe, solution, and site of injection. Any muscle that is handy is used as the point of injection, but he prefers the buttocks and infrascapular regions. At present he is employing a 25-per-cent sterilized solution, and injects 4 Cc. into adults. Only recently he has been using ampoules containing 4 Cc. of a 25-per-cent solution. The injections may be given daily, when the symptoms are severe, for the first three or four days, but in no case has he found it necessary to give daily injections for more than three days, after which time the symptoms were so ameliorated that every other day to two days apart proved of sufficient frequency for the injections.

He asserts he would be remiss did he not report that in two cases of amygdalitis, of the follicular type, in which the salicylates failed injections of magnesium sulphate were given daily for two days with

brilliant results. The injections were aided by applying a saturated solution of magnesium sulphate externally to the throat as a wet dressing. Fever, pain, inflammation, and swelling disappeared very shortly after the first injection and local application.

From time to time more will be published on the therapy of magnesium sulphate, and it is his earnest hope that other practitioners of medicine will give this method of treating acute articular rheumatism a trial. The results are convincing, and while there is no scientific explanation as to how this simple drug acts in such cases, he asserts that one need have no fear of appearing unscientific in employing this very potent agent in combating a disease for which as yet no positive cause has been determined.

THE NON-SURGICAL TREATMENT OF CHRONICALLY DISCHARGING EARS.

In the *Journal of the American Medical Association* of February, 1912, WELLS gives these directions as to methods of applying medication. He says there are three methods that can be employed in bringing medicinal agents in contact with the diseased surfaces of the middle-ear cavities, viz., irrigation, insufflation, and instillation.

By irrigation is meant the directing of a liberal quantity of solution through the external auditory canal, which in case of a sufficient defect in the drum membrane will accomplish a general cleansing of the tympanic cavity. It may be done by means of a bulb or piston hand syringe or by the use of a fountain irrigation bag with a proper nozzle. The solution should have a temperature of 90° to 100° F., and care should be taken to use only moderate force. Too great a pressure will often produce a very unpleasant vertigo. To avoid this it is well to have the nozzle of the instrument so placed that the stream will be directed against the upper or posterior wall, instead of going straight inward. After irrigation, the canal should be dried as thoroughly as possible with cotton-tipped applicators.

Of solutions which are recommended for use in this way Wells mentions boric acid, 4 per cent; phenol, 1 to 2 per cent; liquor cresolis compositus, 1 to 2 per cent; liquor formaldehyde, 1 to 2000; mercury bichloride, 1 to 5000.

The objection to irrigation, at least when frequently practiced, is that it tends to produce maceration of the parts and favors sloughing. Heat and moisture are, moreover, as is well known, the two chief requirements for the growth of bacteria, and perhaps for that reason should be avoided where possible. As done by the patient it is generally efficient, and Wells is of the opinion of Gleason that "discharging ears do better under methods of treatment in which syringing has little or no part." At times, however, it is indispensable, at least in the beginning of the treatment.

Insufflation is the blowing of a powder into the canal of the ear to become spread over the diseased parts. Various powders are used, but mainly boric acid, aristol, europhen, and iodoform. They are aimed to have a drying effect on the membrane and at the same time to exert a germicidal action. Powders should not be used unless there is an almost or complete destruction of the drum membrane and the discharge happens to be very scant. If these precautions are disregarded, caking is likely to occur, and it may be that the perforation in the drum will be clogged, interfering with drainage. This, of course, is dangerous. In all cases in which the use of powder is contemplated an otoscopic examination must be first made, and the ear again carefully inspected from time to time to ascertain the state of things.

Instillation means the dropping of a small quantity of any fluid medicinal agent in the canal, with the intention that it shall arrive at the diseased parts and there produce its healing effects. It is especially designed for the introduction of agents which have for their purpose a supposedly direct therapeutic action on diseased mucous membrane. This method, he believes, is the ideal one for the treatment of the chronic form of otitis. In this condition

profound changes have taken place in certain parts of the middle ear, and it is necessary to reach them if we are to get results. It is only by the instillation method, properly done, as he hopes to point out, that the medicine can be made to arrive successfully at the desired place, especially in a degree of concentration sufficient for the purpose.

The writer calls our attention briefly to one or two points in the anatomy and pathology directly relevant to the main points of his contention.

The tympanic cavity, it must be remembered, does not constitute of itself the entire middle ear. Situated above and behind this cavity lies the so-called antrum, the largest of the mastoid cells. This cell is connected directly with the tympanic cavity by a channel, the aditus and antrum, through which the lining of these two cavities becomes continuous. It is a well-known fact that in all cases of profuse suppurative otitis, the antrum, no less than the tympanic cavity itself, must be regarded as the source of the discharge. The tympanic cavity being more accessible to treatment, and besides being the more advantageously situated for drainage, naturally yields the more readily to treatment and returns the sooner to normal. In favorable cases inflammation of the antral walls subsides *pari passu*, and the case terminates in recovery with a complete cessation of all discharge.

But it often happens that the virulency of the infection is such that, though the tympanic cavity proper may clear up, the antrum still lingers in the throes of the suppurative process. Sometimes the aditus or channel connecting these two cavities becomes much narrowed by the inflammatory thickening of the wall or the presence of inspissated secretions, which naturally increases the difficulties of drainage and may lead to a complete imprisonment of the purulent matter in the antral cavity.

Let no one object that these statements are merely theoretical and speculative. Otologists know well enough that they are based on undisputed pathologic facts, as revealed by the findings of autopsy and the experience of the mastoid surgeon. Those who are in the habit of opening the mastoid process so frequently encounter an antrum filled with granulation tissue, cholesteatoma, polyps, and other products of a degenerated mucosa in cases of old suppurative otitis, and there is never a doubt in their minds that here lies the focus chiefly responsible for the persistence of the discharge. In view of these facts the futility of attempting to cure old otorrheas by the methods ordinarily practiced must be evident.

What more can the routine syringing of the ear accomplish than merely clearing out such secretions as are present in the tympanic cavity? The irrigating fluid, supposing the drum-membrane defect to be adequate, flows through the opening, and returns without coming in contact at all with the region which most requires treatment. Even though some of the fluid did succeed in reaching the more remote recesses of the middle ear, it could not be expected to have any very decided effect, as only dilute solutions of mildly antiseptic qualities can be employed in this fashion.

ALBUMIN MILK AS CONTRASTED WITH OTHER MILK MIXTURES IN THE TREATMENT OF THE DIARRHEAS OF CHILDREN.

HEIMAN in the *Archives of Pediatrics* for December, 1911, writes on this subject. He reminds us that basing his treatment of the diarrheas of children on the supposition that the predominant etiologic factor is bacterial infection, it has been the aim of the pediatrist until recent times to provide a sterile food which at the same time is not a suitable culture medium. With this he usually combined the administration of drugs which were supposed to produce disinfection of the intestinal tract. The view that bacterial infection plays an important part in the diarrheas of children has gradually been losing ground in the last few years, chiefly due to the work of Czerny, Keller, Finkelstein, Meyer, and

Pfaundler. These investigators have shown that in a great majority of cases bacterial infection plays but a secondary rôle, and that the predominant factor is one or more constituents of the food which produces a disturbance in the metabolism. With the coming forward of this view it can be readily seen how the dietetic treatment must assume more and more importance. First of all, the proteids were held responsible, then the fats, and last the carbohydrates have been accused of being the offending agent. Starting with this supposition, that the carbohydrates are the active producers of fermentation in the intestines, Finkelstein and Meyer have recently advised the use of a food which they call "Eiweiss milch" or "albumin milk." The experience of Finkelstein and Meyer at the Kinderasyl in Berlin showed that an infant food which is adapted for the removal of intestinal fermentation must contain a minimum amount of carbohydrates and salts with a normal amount of casein and a variable amount of fat. They found that casein, when added to the diet of an infant suffering from intestinal fermentation, produces a rapid improvement in the stools.

Such a food is prepared as follows: A tablespoonful of essence of rennet (or two tablets of rennet) is added to 1 liter of milk, which is then placed in a water-bath at 42° C. for one-half hour. It is then filtered slowly by gravity without any pressure for about one hour through cheesecloth. The coagulum is then washed twice in ½ liter of water through a very fine sieve and forced through by means of a wooden club. Then ½ liter of buttermilk is added. The chemical analysis of this food shows:

	Eiweiss milk.	Cow's milk.
Proteids	3.00	3.00
Fats	2.50	3.50
Carbohydrates	1.50	4.50
Ash	0.50	

A liter of Eiweiss milk contains about 370 calories.[1]

[1]Since the writing of this paper the author has regularly added 1 grain of saccharin to each quart of albumin milk, finding the palatability of the food considerably increased by this addition.

Finkelstein and Meyer's results with this food in cases of diarrhea, including those of dyspepsia, decomposition, intoxication, and parenteric infections, were strikingly brilliant. In most cases the diarrhea disappeared in the course of three days, and the temperature became normal. It was found, however, that in the majority of cases there was a loss of weight during the continuance of exclusive feeding with Eiweiss milk. To overcome this loss, sugar in the form of Soxhlet's sugar, Liebig's extract, or Loeflund's maltose was added in increasing quantities, as soon as the stools became formed. In most of the cases Eiweiss milk was used from eight to twelve weeks. In none of them was any deleterious effect demonstrated from this mode of feeding.

Finkelstein and Meyer's report on the striking results obtained with this food came out in the May and June numbers of the 1910 *Jahrbuch für Kinderheilkunde,* and did not reach the writer until July. Several weeks were consumed in overcoming technical difficulties in the preparation of the food, so that the greater half of the diarrhea period passed before it could be employed at the bedside. These remarks are made in anticipation of a possible criticism of the small number of cases reported on. In analyzing the tables it was unfortunately found that a considerable number had to be excluded for one reason or another as inconclusive, so that there remained only 13 cases for the present report, which, had it not been promised, he asserts he would feel very reluctant to present at this time.

Eiweiss milk was administered to 13 patients suffering from diarrhea for a length of time sufficient to determine its immediate effect on the general and local condition. The author wishes to make clear that his aim was not to study the results of a prolonged use of the food, but its effect during the first five days. This, to his mind, is the only fair test for the efficiency of antidiarrheal dietetic or remedial agents. For the purpose of proper classification these cases were divided into mod-

erate and severe. The moderate cases included those with only slight fever, mild general symptoms, and green stools varying from six to ten a day, containing mucus. The severe cases included those in which there was prostration, pyrexia, and very many stools, eight to ten or more a day, green in color and occasionally blood-streaked. The latter class would come under the head of alimentary intoxication of Finkelstein. There were seven cases of the moderate type. Their ages were: One 4½ months, two 5 months, one 7 months, one 12 months, one 15½ months, one 16 months. All but two had previously been breast- and bottle-fed. Two were exclusively bottle-fed. The duration of the disease previous to the admission to the hospital varied from five days to five weeks. The Eiweiss was given for a period varying from three days to twelve days. The effect of the administration of Eiweiss on the stools is shown in the following table:

Condition of stool after treatment.	*Prior to treatment.*
1st case, 6 green stools.....	Yellow after four days.
2d case, very many green stools	Three green after eight days.
3d case, 5 green stools.....	Two green after second day.
4th case, 10 green stools.....	One green after second day.
5th case, 6 green stools.....	Two green on third day.
6th case, 6 green stools.....	No change.
7th case, 3 green stools.....	One yellow after three days.

Of these, three gained from 2 to 5 ounces and four lost from 2 to 5 ounces.

Maltose was added from the second to the tenth day, and in one case at once. All but one of these recovered.

SOME CLINICAL CONSIDERATIONS OF OSMOTIC PRESSURE.

Jona in the *Australian Medical Journal* of December 2, 1911, reminds us that the cells of all animals above the Elasmobranch fishes are bathed in a nutrient fluid whose osmotic pressure is a constant, and which is kept constant, against alterations in the osmotic pressure of the animal's environment by various mechanisms in the body.

This process of standardization of the physical constants of the cellular environment has rendered these cells very sensitive to alteration in these constants, and so any alteration in, say, the osmotic pressure of the environment will be accompanied by alteration in the normal functions, or even by disintegration of the cell. For example, the red blood cells of a mammal are attuned to a fluid environment of a constant osmotic pressure, which is represented by a depression in the freezing point of about 0.6° C. Now, as is well known, if these cells be exposed to an environment whose osmotic pressure is above this standard, which is represented by 0.9 per cent (normal) saline, say, to a 5-per-cent salt solution, the corpuscular envelope is unable to withstand the tendency of water to pass out from the cell into the environment in response to its higher osmotic pressure, and so the volume of the corpuscle diminishes and the capsule becomes crenated. Similarly, when the corpuscles are placed in a hypotonic solution, or in distilled water, they swell and ultimately burst, due to the passage of water through the capsule into the corpuscle as a result of the higher osmotic pressure of the contents.

The blood of the normal animal has an osmotic pressure represented by a Δ of about 0.6° C., which is equivalent to a pressure of about 7 atmospheres. Now, all the secretions and excretions of the body have the same osmotic pressure as the blood except the sweat, saliva, and urine and tears, and probably gastric juice. Saliva and sweat are always hypotonic. Urine varies; so also does gastric juice. The tears are said to be hypertonic. The variations in Δ of urine in men lie between 3.5° C. and 0.08° C., the low readings occurring in certain cases of diabetes or after a prolonged drinking bout, the average on ordinary diet being about 1.2° C. It is principally by means of the kidneys, with the intelligent coöperation of the will, that the osmotic pressure of the blood is maintained constant. Any tendency to dilution of the blood is quickly and easily got over by the copious production of watery sweat and dilute urine; but the reverse process, the keeping down of the osmotic pressure when circumstances determine a rise, is much harder and entails a great deal of work on the kidneys

in producing a concentrated fluid from the blood, against a great osmotic pressure. That the cells of the body soon suffer when the osmotic pressure of the blood rises is at once seen in the case of sailors lost at sea who try to quench their thirst with sea water, which has an osmotic pressure about four times that of the blood. The cells of the highest nervous centers are the first to suffer, and the individual becomes maniacal and usually puts an end to his existence long before his suffering but wiser comrades who do not drink the sea water; but these eventually suffer the same fate, especially if atmospheric or other conditions favor the loss of abnormal quantities of water, in the form of perspiration, etc. Similarly with other tissues—*e.g.*, if a strong saline or saccharine solution be taken into the mouth the mucous membrane becomes "roughened," or if any part of the body be kept submerged in water, water is imbibed and the part becomes waterlogged.

Now, the passage of salts or water through a tissue in response to osmotic influences acting from without is accompanied by more or less painful sensation. It is generally common experience that the introduction of a drop of distilled water or strong salt solution into the conjunctival sac—especially if this membrane be inflamed—is distinctly unpleasant, while the introduction of normal saline, especially if it be warmed to body temperature, is quite unnoticeable. This is a point which could very well be noted in connection with the ordering of eye lotions or eye washes, a drug having a much better chance of exerting its action when the eye structures exposed are not being irritated by a hypotonic solution; and similarly with solutions whose only functions are lavage, such as lotions for washing out bladder or urethra, or for bathing extensive raw surfaces. The author has tried isotonic solutions in all these classes of cases, and the patients' expressions of comfort were really worth the trouble of adding a teaspoonful of salt to the pint of lotion. Another use to which a normal saline solution could be put is in the making up of washes and lotions in which the surgeon steeps his hands for several minutes at a time in sterilizing them. As is well known, under ordinary conditions the skin of the hands soon becomes waterlogged and loses the delicacy of its sense of touch, which is a distinct disadvantage in some cases.

We thus see how the various tissues of our body suffer when exposed to hypertonic and hypotonic solutions. The walls of the mucosa lining the alimentary tract form no exception to this rule. Although the semisolid foods, which enter our alimentary canal, are principally albuminous and hence play a very small part in the osmotic phenomena in the body, yet we know that liquid foods which enter the body have an osmotic pressure varying from practically *nil* in the case of tap water to many times that of the blood in the case of some beverages. What is nature's attitude toward the ingestion of these foodstuffs? The researches of the author on the subject have shown that of all the fluid foods which enter the body, the sense of taste regards as bland and acceptable all whose osmotic pressure is a little below that of the blood (with a Δ of about 0.4° to 0.5° C.), so long as the fluid does not contain any irritating chemical substances which have specific action on the senses of taste and smell.

Fluid foods which possess a lower osmotic pressure than this, such as extracts or infusions of vegetable or animal matter (as tea, coffee, vegetable soups, and meat broths), are brought up to this standard by a sugar or salt addition respectively in the various cases. This hypotonic food leaves a water excess which is useful to the animal's economy for the dilution of hypertonic gastric juice or the supplying of a means of flushing out the system through the secretory activity of the cells of the kidney or sweat glands. The ingestion of foods whose osmotic pressure is above that of the blood leads to the development of the sense of thirst. This desire for drink is most naturally satisfied by water, which would dilute the hypertonic solution down to a reasonable degree. As far as his work

has gone it shows that alcoholic beverages form the only exception to this rule. The explanation is that man is the only animal who manufactures and consumes alcoholic beverages, and so nature has not had time to develop in him the protective mechanism in this osmotic quality of the sense of taste which demands the ingestion of water to satisfy the thirst brought on by the taking of the hypertonic foods into the mouth. All fluid foods which contain a saline content above that of the blood must enter the body under protest. In the case of saccharine fruit-juices, or alcoholic beverages, the sugar or alcohol, as the case may be, rapidly enters the blood and is oxidized or stored in the body, while the saline constituents alone remain to play their part in the osmotic phenomena in the body. The author's work has shown that all those fruit-juices which possess a high osmotic pressure owe this high pressure to their sugar content, and not to their inorganic salts.

These facts lead us to the conclusion that in the ordering of diets, particularly for infants or invalids, especially those afflicted with gastrointestinal troubles, we must see that they are correct not only as to their chemical constitution but also as regards their physical relationships to the blood. The broths, drinks, etc., should always be salted or sugared up until they are just hypotonic to blood—thus allowing a slight water excess for flushing-out purposes. The foods should not even be isotonic with the blood, for the experiments of Sommerfield and Roder have shown that an infant fed on an isotonic milk diet excretes hypertonic urine. This means that under these apparently ideal conditions the kidney is doing work against osmotic pressure. This is a consideration in cases of severe kidney inefficiency, for, by so modifying the diet, we can diminish the work of this organ against osmotic pressure and so give it a better chance of recovering and performing its other functions more effectively, for the work of Kovesi and Roth-Schultz shows that the pathological kidney does not possess the power of accommodation to alterations in the osmotic pressure of the diet (Akkomodations breite) that the normal kidney possesses, particularly those described as acute and chronic parenchymatous nephritis.

In diarrheic conditions, too, the osmotic pressure of the diet should be taken into account. The transudate in cholera and diarrheic conditions generally has been shown to be really a saline fluid isotonic with blood, so that the fluid which is given to the patient to quench the severe thirst produced should not be pure water, but should be a fluid containing all the saline constituents of the blood. Such a fluid, as Ringer's fluid, slightly diluted, would admirably suit this purpose.

The whole subject is intensely interesting and opens up many fields, which can, however, be much better studied clinically than in the laboratory.

TREATMENT OF PNEUMONIA BY A POLYVALENT STOCK PNEUMOCOCCIC VACCINE.

CHARTERIS in the *Glasgow Medical Journal* for January, 1912, reaches the following conclusions:

1. The administration of a stock pneumococcic vaccine had no marked effect upon the subsequent course of the disease.

2. The mortality in the vaccine series (21 per cent) was slightly higher than in the control series (20 per cent).

3. The early administration of vaccine did not abort the disease, nor prevent complications.

4. Complications were relatively frequent in the vaccine series, viz., one instance of meningitis, two of empyema, and one of hyperpyrexia.

PITUITRIN AS AN AID IN OBSTETRICS.

HIRSCH, in the *Münchener medicinische Wochenschrift* of April 30, 1912, says that in all cases of abortion or artificially induced labor it is not possible to instigate uterine contraction and expulsion by the use of pituitrin. If, however, the cervix is di-

lated by a tampon the use of pituitrin results in immediate uterine activity. When Cæsarian section is performed pituitrin is a most valuable agent to induce and maintain contraction of the uterine muscle whereby hemorrhage is controlled. For the treatment of the patient after parturition pituitrin is a satisfactory substitute for ergot.

THE TREATMENT OF SCIATICA BY MEANS OF INTRANEURAL INJECTIONS OF SALINE SOLUTION.

The London *Practitioner* for January, 1912, contains an article by HAY. As to the technique he says that in making the injection he uses an ordinary antitoxin syringe fitted with a needle 4 centimeters long. To find the nerve he has been in the habit of using a method the name of whose inventor he has forgotten. With the patient lying prone he identifies the posterior superior iliac spine and from it draws two imaginary straight lines, one to the tip of the great trochanter and one to the inner margin of the ischial tuberosity. He bisects the angle thus formed and measures 6½ centimeters along the bisecting line. Round the point thus obtained he presses firmly with his thumb until he finds a spot at which pressure causes pain along the course of the nerve. He marks this spot by pressing his thumb-nail firmly into the skin so as to indent it.

The skin is then cleansed and the needle of the syringe, already filled with saline solution at blood heat, is inserted perpendicularly to the surface until it reaches the bone, and then withdrawn about half a centimeter. Before proceeding to inject it is necessary to make sure that the point of the needle is actually within the nerve sheath. Most operators state that when the needle pierces the nerve the patient's leg jerks convulsively. In many cases this is true, but in others, especially if they have been injected previously, no such indication is given. Having inserted the needle, therefore, as described above, it is well to press gently on the end of the plunger so as to expel a few drops of fluid from the needle, and ask the patient if he feels anything. If the needle be within the nerve sheath he will reply that he has a sensation as of trickling or crawling, or in rare cases of actual pain, and will indicate the direction of the sensation by drawing his finger downward along the line of the nerve. The distance downward to which this sensation extends varies in different cases, and in the same case at different sittings. It may stop at mid-thigh, or may pass downward as far as the foot. When this sensation has been elicited the syringe should be emptied rapidly, the needle withdrawn, and the puncture sealed. In his latest cases Hay has used Heck's landmark, and is of opinion that it is even more useful than that described above, especially in fat patients, in whom it may be difficult to identify the inner margin of the ischial tuberosity.

After injection, if the pain beforehand has not been sufficient to confine the patient to bed, he is made to get up and walk about slowly, and if he be an out-patient he is sent home immediately. In cases in which he has been confined to bed he is allowed to lie still until he feels himself free from pain.

In Hay's experience the most severe cases have given the best results, and he cannot therefore accept Bunn's advice against the use of injections in acute cases.

It will be observed that he uses much smaller quantities of fluid than most other operators (Lange and most of his followers use 70 to 100 Cc., Hecht up to 120 Cc.), and in view of his results he does not consider that the use of the larger quantities offers any advantages, while it has disadvantages in being occasionally followed by high temperature and rigors, or sometimes by weakness and wasting of the limb.

Indications for Treatment by Injection.—In his opinion all cases of persistent sciatic pain not due to diseases such as tabes, diabetes, malaria, etc., nor to pressure by tumors intra- or extra-pelvic, ought to be subjected to injection early. In view of the rapidity with which a cure is obtained in favorable cases it seems a pity to keep patients waiting while ordinary methods of

treatment are employed for weeks or months. In his hospital practice the cases which come to him have all been previously subjected to drug treatment. He then treats them for a week with high-frequency currents, general and local, to eliminate certain cases curable in that way and also those amenable to suggestion. The cases which receive no benefit from high-frequency treatment are then injected. In cases not benefited by injection he recommends open operation, preferably shifting the sheath and teasing out the nerve strands, and dissecting away all adhesions between the sheath and surrounding tissues. He does not advise bloodless nerve stretching, as he considers it a haphazard method, inferior in results to injection.

THE CAUSE AND TREATMENT OF SUMMER DIARRHEA IN CHILDREN.

Wood in the *Australian Medical Journal* of January 13, 1912, in writing on this topic says that scrupulous cleanliness must be insisted upon, the buttocks being carefully washed with boracic lotion or soap and water when each napkin is changed, carefully dried and powdered with violet powder or talcum powder, and if there is the least sign of redness zinc cream will remove it. It is easier to keep the buttocks in good condition than to heal them when they become excoriated.

The soiled napkins are a great source of repoisoning; the common practice of keeping the soiled napkins for the doctor to inspect is a pernicious one. Wood frequently goes into a bedroom in summertime, he asserts, and finds ten or twelve soiled napkins lying on the floor or mantlepiece uncovered, with flies on them. These flies take up the poison on their legs and quickly transfer it to the various feeding utensils, etc. The nurse should be instructed to remove them from the bedroom and put them into phenol and water directly they are soiled, and cover them up. Also strict cleanliness with regard to the hands after handling these napkins should be insisted upon—many a diarrhea is kept up by inattention to this most necessary point. Wood asserts he has seen an epidemic of summer diarrhea started in an infant asylum from a newly-admitted child owing to the diet nurse having handled a soiled napkin and not washed her hands.

When the child is first poisoned with infected milk it usually vomits sour, curdled milk; that is the warning that nature is trying to get rid of the poison. If the medical man gets in early he can, with a No. 10 Jacques soft-rubber catheter and a funnel, wash the stomach out thoroughly and put a teaspoonful of castor oil into the stomach before removing the tube. This initial washing out with boiled water and a teaspoonful of baking soda to the pint is usually sufficient to stop the vomiting. The bowel should also be washed out at the same time as the stomach. It stimulates peristalsis.

If the child is over twelve months and the mouth is well furnished with teeth, copious drinks of boiled water with half a teaspoonful of sodii bicarb. to the pint may be given. This is, as a rule, vomited, and this cleans the stomach effectively.

Some of the poison has, as a rule, passed into the small intestine, so the initial washing of the stomach must be followed by a cathartic, and the old-fashioned castor oil is still one of our most effective doses.

The thorough cleansing of the alimentary tract directly after a poisonous dose of milk is one of the most effective ways of cutting short an attack of diarrhea. The folds of the intestinal mucous membrane which retard the intestinal contents for digestive purposes during health are anatomic obstructions that become pathological dangers when the pockets retain putrefactive food products, pathogenic bacteria, and toxins.

Therefore a thorough complete cleansing of the intestine with a cathartic and a thorough washing with water from the stomach to the rectum is the only proper treatment of the disease.

Look on the poison as one would a poisonous dose of arsenic, and get rid of it in the most thorough way possible. Water for twenty-four hours after this cleansing

is the proper treatment. It may be given hot through a sterile bottle, or, if preferred, cold.

At the end of twenty-four hours, if fresh milk can be obtained, the child may be put on alternate bottles of rennet whey and boiled water. If the whey agrees it may on the following day be given in every bottle, and the next step is to boil it and add milk to it in gradually increasing amounts, being guided by the appearance of the motions as to whether the child is able to digest it.

If the whey does not agree one of the artificial foods, preferably one with a little starch in it, is often taken well and is a useful stepping-stone by which the child may be gradually taken back to milk.

The great secret in feeding the child is not to order half a dozen different things to be given alternately. Try one at a time, and if it agrees stick to it, and if it does not move on to something else. It is not an uncommon experience to see a child with summer diarrhea on albumen water broth, raw meat juice, whey, and something else, given one after the other on the same day. If baby does not improve you must be at a loss to know what to blame for the non-improvement.

If one cannot get anything to suit the baby, one must not forget that nature would give breast milk if the mother had not failed, and that a wet-nurse can usually be obtained with a little trouble. If not, it is very rare that a mother cannot get another nursing mother to provide some breast milk, even if she will not actually nurse the child at the breast. Wood has observed some cases that looked almost hopeless saved with breast milk.

As to drugs, he asserts he has tried them all and finds himself very doubtful now as to the propriety of giving any of them except opium. He stopped giving bismuth, suspended with acacia, some years ago, as it was his fate to see the teaspoonful dose in the intestine, without having been spread over the mucous membrane, as he had fondly hoped it would have been.

He used bismuth subnitrate in large doses (10 grains every two hours) for many years, but the cases he finds now do as well without it. Salol, resorcin, and liquor hydrargyri perchloridi have all in turn been used as intestinal antiseptics, but those who formerly strongly advocated their use have gradually become less fervid in advocating them.

The use of opium in these cases requires care, and it is wise not to combine it as is usually done with other drugs. If one uses bismuth one must give it in large doses and frequently; but the opium has to be given according to symptoms and had best be prescribed apart from the bismuth. The initial cleansing of the alimentary tract is essential after an attack of poisoning; this is followed by water diet for twenty-four hours, and then opium may be safely started to relieve pain and check excessive peristalsis, but never enough to stop the motions and cause stupor.

Opium is also very useful in the convalescent cases in which extra food is being taken, and it is found that a bottle of food is immediately followed by a motion; giving the food cold is also wise in these cases as it is less apt to be followed by peristalsis. In cases of dysenteric diarrhea, starch and opium enemata relieve the tenesmus. In cases of cholera infantum, in which a high temperature is followed by frequent vomiting and purging, the motions quickly become the type known as rice-water stools. Morphine hypodermically is our only remedy, and is frequently the means of saving the child's life, neutralizing as it does the effect of the toxin on the heart and nervous system. [We doubt this.—Ed.] For a child twelve months old 1/48 of a grain of morphine may be used, and if the vomiting and purging are not checked in an hour's time it may be repeated. In these cases the symptoms are so rapid in their onset that nothing short of stomach and bowel washing is of any avail, and this must be done as soon as the child is seen.

The high temperature frequently met with in cases of summer diarrhea is best treated with cold bathing and sponging, always using colder water on the head than the water in the bath, to avoid headache.

Washing out the bowel with a long rectal tube and a funnel is frequently of the very greatest service. Wood has frequently had a baby brought to him with a high temperature, crying bitterly, drawing up its legs with abdominal pain, and had the satisfaction of seeing the child go to sleep whilst gently irrigating the bowel with warm water and bicarbonate of soda (a teaspoonful to the pint). Once a day is quite often enough to do this, but if the child offers much resistance it is often unwise to persist in attempting to do it. Often a large amount of flatus is allowed to escape from the bowel by this method, with very great relief to the child.

THE TREATMENT OF CONSUMPTIVES IN PRIVATE PRACTICE.

In the *Australian Medical Journal* of December 2, 1911, BAGE tells us that for the last two years he has used the filtered bouillon supplied by Professor Denys, of Louvain. This variant of old tuberculin is so extensively employed in Europe, and so little known here, that a short description of its constitution and mode of use will not be out of place.

The material used, known familiarly as B. F., is prepared by allowing virulent cultivations of the tubercle bacillus to macerate slowly in Koch's bouillon for long periods in closed vessels; some of the cultivations had been macerating for eight years at the date of the writer's information. Another method employed with equal effect is to mix a bouillon that has been two years in contact with these bacilli and a bouillon that has been so treated for six months. In each case the preparation is filtered through porcelain, and the filtrate, without being heated or concentrated by evaporation, is bottled for use. What means of standardizing it are employed the writer does not know, but its reaction-producing power is about equivalent to that of the old tuberculin.

On first using this preparation Professor Denys began with a dilution of 1 in 10, finally attaining a dose of 1 Cc. of the undiluted preparation. But in pursuance of his method, which was to avoid producing a reaction, he found it necessary to make a further series of dilutions, viz., 1 in 1000, 1 in 10,000, and so on to 1 in 10,000,000, the diluting fluid used being Koch's bouillon. Owing to his reluctance to alter the labeling of the dilutions he first employed, his nomenclature of these eight strengths is somewhat confusing, and upon making the successive dilutions for use upon his own patients, he found it convenient to number them from the weakest No. 1 successively to the undiluted preparation No. 8. The method of employment is to give regularly increasing doses twice a week, beginning with the weakest dilution in afebrile cases. Four or five progressively increasing doses are given from each strength until 1 Cc. of the undiluted preparation is reached. But this regular increase of dose must not be practiced in the event of a reaction occurring. Should a reaction occur, the same dose must be repeated next time, but not until after the reaction has subsided; if another reaction occurs the dose is to be diminished, increasing again when tolerance is established; and even in the absence of reaction it is recommended that at some periods the dose that has been attained should be repeated for two or three weeks, without increase. It is essential, therefore, to be on the watch for evidence of reaction, in the form of induration, redness, heat, or pain, occurring some hours after the dose is administered; sometimes in the infected area, pain and oppression in the chest, increased cough and expectoration being suggestive of reaction in pulmonary cases. But the more common evidences are of a general character, such as headache, pains in the limbs, general discomfort, depression, weariness, restlessness, insomnia, loss of appetite, rise of temperature, and occasionally drowsiness. On several occasions the author obtained marked reactions through impatiently advancing the dose when the quiet progress of the case made him suspect that the bouillon was inert. Great stress is laid by Professor Denys upon the observation of minute variations in temperature,

and he recommends that the patient should be drilled into taking his temperature five times a day, keeping the thermometer under the tongue for seven minutes or in the axilla for fifteen minutes.

The claims made for this treatment are that it immunizes the tuberculous subject against his tuberculosis, and that the patient after a second course of treatment a few months later will not react to the tuberculin test. A statistical diagram is published showing a large proportion of cures, especially in early cases, and it is said that even when the bacilli do not disappear from the sputum they are often observed to have degenerated, becoming elongated and granular.

An attractive feature of this treatment is that it is not attended with distressing reactions, and that the patient's routine is so little disturbed by it. When Bage came to put it into practice two years ago he was soon convinced that even in the smaller doses a steadying effect was produced upon the patient's temperature, and he then resolved to make a definite trial of its effects in the first instance upon advanced cases of consumption. Success in incipient cases would prove nothing, while harm might be done by keeping these patients in town instead of sending them away to better surroundings. Besides, he soon found that there is a limit to the number of consumptives that one can attend privately; most of them are impoverished by illness and would be unable to persist in a long course of treatment without special encouragement. His notes therefore relate to a comparatively small number of patients, for he made it a rule to advise removal from town wherever practicable in incipient cases. Two were cases of enlarged glands in the neck, these patients reacting positively to the von Pirquet test. The remaining twelve exhibited the bacillus in their sputum; five of these twelve had cavities, and all but one had patches of consolidation; in four cases both lungs were affected.

It would have been interesting and valuable to have compared this treatment with a similar use of the old and new tuberculin, and to have tested the patients by means of the various diagnostic reactions. But private medical practice cannot be carried out on the lines of scientific experimentation, and these observations must be left to a future occasion.

Bage's conclusion is that this method has a powerful immunizing tendency, and that it is very much safer than any of the processes that are designed to evoke repeated reactions. Being regulated by clinical observation it is eminently applicable in private practice, and is an ideal method for tuberculin dispensaries, which are, in Bage's opinion, much needed in Australia.

[Our own belief is that tuberculin in all its forms should be used only in a very limited class of cases, and only by men specially trained in its administration and study.—ED.]

THE SOLUTION AND DECOMPOSITION OF ACETYL-SALICYLIC ACID.

To the *British Medical Journal* of February 3, 1912, MARTINDALE writes as follows:

Dr. Graham Chambers criticizes Dr. Wynn Westcott and Martindale for stating in the Extra Pharmacopœia that acetyl-salicylic acid passes unchanged through the stomach, decomposing when it reaches the intestine, his view being that the substance is absorbed as such without decomposition. His experiments *in vitro* indicate that very little of the acid splits up in half an hour, either in acid or alkaline juices, and in his conclusion he advocates the administration of acetyl-salicylic acid "in solution," so as to reduce the decomposition to a minimum —that is, he claims that so given it passes rapidly into the intestine (pharmacological action being frequently seen in half an hour) and is absorbed for the most part unchanged. It therefore appears that the statement in the Extra Pharmacopœia to the effect that it passes unchanged through the stomach (whether given in cachet or solution would probably make little real difference) may certainly stand, even according to Dr. Chambers's view—the exact

pharmacological action is not stated, though perhaps it is implied.

With regard to the action on reaching the alkaline intestinal juices, there must surely be a splitting up of the acetyl-salicylic acid, and the formation of sodium salicylate, however slight at this stage, either from the nascent salicylic acid previously formed in passing through the stomach—admitted by Dr. Graham Chambers—or by the splitting up of the acetylated acid by action of the alkali. Dr. Graham Chambers admits, also, that at body temperature there is "little" of the acetylated acid decomposed at the end of half an hour both in acid and in alkali *in vitro*, but of course it is difficult to say exactly what occurs *in vivo* by reviewing experiments *in vitro*.

Martindale points out that the prescribing of acetyl-salicylic acid in simple aqueous solution is hardly satisfactory. A dozen 10-grain doses in this form would necessitate the dispensing of them in a 120-ounce Winchester! At the same time a very sightly mixture can be made by suspending 10 grains of the powdered acid in ½ ounce of water, with the aid of 90 minims of tragacanth mucilage—that is, 12 doses in a 6-ounce bottle. Sooner or later, however, in presence of water, acetyl-salicylic acid splits up, and therefore the use of an aqueous medium, let alone an alkaline one, especially in hot weather, cannot be strictly correct; 10 grains of the drug in powder form would require about 10 ounces of stomach juice to dissolve it, and the result—passage rapidly to the intestines—as Dr. Chambers holds, would be practically the same thing as if the drug were in solution.

With regard to the details of experiments, it so happens that by a curious coincidence Martindale conducted a number of experiments last year with aceto-salicylic acid, both in aqueous solution and in solution with added HCl in the correct proportion, and arrived at conclusions almost identical with those of Dr. Graham Chambers, so far as *in vitro* is concerned. For example, he found by colorimetric analysis that 5 per cent of a total weight of aceto-salicylic acid in saturated solution in presence of 0.2 per cent HCl was hydrolyzed in an hour. Seeing that pharmacological activity is evident in less than this time, it may be that just this small amount of liberated nascent salicylic acid passing on to the alkaline intestinal juice produces or commences the pharmacological action, and we may have here an explanation of the comparatively potent action of a dose of salicylic acid in comparison with the mild effect of this slowly produced nascent acid. Dr. Chambers and Martindale are agreed that the decomposition of acetyl-salicylic acid in the presence of 0.2 per cent HCl is a gradual process, and adds that so long ago as 1903 (*Schweiz. Woch. f. Chem. u. Pharm.*, 1903, p. 116) doubt was expressed whether the therapeutic activity of acetyl-salicylic acid was due to its passing unchanged into the intestines, and experiments are cited showing the hydrolysis of aceto-salicylic acid in presence of artificial gastric juice. It was there questioned whether a dose of a salicylate would not produce a therapeutic effect equal to the acetylated acid.

RECENT ADVANCES IN OUR KNOWLEDGE OF RACHITIS.

TALBOT in the *American Journal of Diseases of Children* for February, 1912, states that Kassowitz first recommended phosphorus in the treatment of rachitis. His original prescription, known as phosphorlebertan (phosphori 0.01, ol. jecor aselli, q. s. ad 250), still holds first place in Germany in the treatment of rachitis. Kissel found in his experiments on animals that phosphorus had absolutely no effect on the skeletal system, and concluded that there was no ground for its use. Despite this report phosphorus continues to be used and many experiments have been performed to prove its efficiency.

Birk and Schabad both concluded that phosphorus in therapeutic doses does not affect the calcium metabolism in healthy children. Such children take only as much phosphorus as they need for growth re-

gardless of the amount in the food. In rachitis cod-liver oil increases the retention of phosphorus and calcium, and this action is intensified by the addition of phosphorus to the oil. The increased retention of calcium starts three to five days after giving phosphorus, and gradually diminishes until at the end of two months it is again normal. This depends on the increased absorption and decreased excretion through the urine and feces. The question now comes up whether oils as such in combination with phosphorus have a therapeutic action on rachitis. Schabad investigated the action of phosphorus, cod-liver oil, and "sesamol" on the metabolism of calcium, phosphorus, fat, and nitrogen, and found that "sesamol" and phosphorus did not help the rachitis, while cod-liver oil plus phosphorus increased the retention of phosphorus and calcium and the absorption of fat and nitrogen. Schabad and Sorochowitsch used lipanin, *i.e.*, olive, a substitute for cod-liver oil, which was supposed to be easily absorbed because it contained free fatty acids. They concluded from their metabolism experiments that lipanin and olive oil increase the absorption of nitrogen and fat, but that lipanin has no advantage over olive oil. Lipanin does not increase the retention of calcium in rachitis, and is therefore not as good as cod-liver oil in the treatment of rachitis. They say in their most recent article that sometimes phosphorus and cod-liver oil do not have a favorable action on the retention of calcium in rachitis, especially if the disease is not approaching a convalescence. At other times they have a favorable action on the calcium retention. They experimented with various other salts combined with cod-liver oil and found that a calcium acetate cod-liver oil had the most favorable action on rachitis because it contained much more calcium.

Most recently Caroline Towles did a series of metabolism experiments in von Pirquet's clinic in Breslau and was unable to demonstrate that phosphorus cod-liver oil had any action at all on acute rachitis. The most recent work of Towles and Schabad and Sorochowitsch indicates, therefore, that phosphorus cod-liver oil may not have any therapeutic action in the treatment of acute rachitis.

CHRONIC URETHRAL PRURITUS.

The *New York Medical Journal* of February 17, 1912, contains an article by GREENBERG in which he says that, as to treatment, this must be applied to the removal of the cause. The itching from acute gonorrhea disappears with the subsidence of the acute inflammation. Polypi in the urethra should be removed with the curette and the base cauterized, or, better still, for quicker results, treated by fulguration by the high-frequency current. Strictures should be dilated and cut when resilient. Granulations may be destroyed with the galvanic needle or by 20- to 30-per-cent silver nitrate solutions, preferably the former. In chronic posterior urethritis without prostatitis, the verumontanum should be touched up with strong solutions of silver nitrate once a week, and dilatation of the prostatic urethra by means of Kollman's dilator may often be resorted to with advantage. In others, cold sounds must be used through a metal catheter for one-half hour at each séance. The faradization of the prostatic urethra gives great relief to some patients when other methods fail. In very intractable cases, where we cannot determine the cause of the itching, relief of symptoms is obtained with an ointment consisting of

> Ichthyol, ʒj;
> Resorcin, grs. x;
> Quinine and urea hydrochloride, ʒss;
> Wool-fat, ʒij.

To be applied to the urethra by means of an ointment sound.

When the prostate and the seminal vesicles are at fault they should be attended to by massage, faradization, cold psychrophore, and high-frequency applications.

Rheumatism, gout, and other metabolic diseases should be treated. The diet should be simple, non-irritating, and easily digestible; fruits and vegetables containing large amounts of acids (such as oxalic acid) should be avoided; likewise condiments and

all other stimulants, including alcohol. The skin must be attended to by daily baths and brisk rubbing, particularly in neurasthenic patients. The bowels should be regulated by salines or mineral waters, followed by large draughts of water.

Patients thrive well on a starchy diet, which should include oatmeal and rice; red meats should be eaten sparingly. Intestinal autointoxication should be combated by appropriate means, the therapeutics being directed toward rendering the urine bland, and the nervous system must be properly taken care of.

THE USES OF ALUMINUM ACETATE IN LOCAL INFLAMMATIONS.

STANSBURY in the *American Journal of Surgery* for February, 1912, says that the various treatments of such local congestions as boils, carbuncles, erysipelas, and all forms of wound infection, etc., prove, without further argument, that no one is especially helpful. For instance, the local use of iodine, ichthyol, phenol, bichloride of mercury, and solutions of lead and opium, heat and cold, all have the effect of producing a certain extent of hyperemia and asepsis, but to Stansbury they have been disappointing in their results. A watery solution of aluminum acetate, 1 to 7, has been very much more successful.

The formula in the National Standard Dispensatory for "Liquor Aluminii Acetatis" is:

> Aluminum sulphate (U.S.P.), 300 Gm.;
> Acetic acid (U.S.P.), 300 Gm.;
> Calcium carbonate (C.P.), 130 Gm.;
> Water (distilled), 1000 Cc.

Dissolve the calcium carbonate in the acetic acid, mixed with 200 Cc. of water, and the aluminum sulphate in 800 Cc. Mix the two solutions and allow the mixture to stand for twenty-four hours, agitating occasionally. Then pour off the clear solution and filter. The solution contains 7.5 to 8 per cent of basic aluminum acetate. It is practically identical with the Liquor Aluminii Acetici of the German Pharmacopœia.

When prepared, the solution should be perfectly clear. It is to be diluted with distilled water 1 to 7 or 10. Gauze is saturated in several thicknesses, applied directly to the parts and covered with rubber tissue or oiled silk, and a loose roller bandage is then applied. When employed in this way the dressings remain moist and it is not necessary to change them more than once or twice in twenty-four hours. When the dressings are removed the skin will be found whitish and much wrinkled unless the skin is very much congested, as in erysipelas. Stansbury has kept up the application for days and has never noticed any bad effects whatever.

Range of Usefulness.—Boils and carbuncles treated in this way are usually aborted, or if pus has already formed, the area of redness and induration is lessened and pain much reduced.

In facial erysipelas the happiest results are obtainable. Stansbury asserts he has never seen it fail to check the spreading of this obstinate infection.

In threatened alveolar abscesses from bad teeth it is, in his opinion, without a rival.

The first case treated by him with this agent was a woman, who said she was going to have another "gathered jaw," as she had had four previous times from the same tooth. She already had marked swelling, great pain and sensitiveness, and rise in temperature. A pledget of absorbent cotton the size of a little finger was saturated with a 10-per-cent solution of aluminum acetate and placed within the mouth, between the alveolar process immediately over the swelling and the cheek, while another piece of gauze saturated with the same solution was placed on the outside of the jaw, covered with rubber tissue and bandaged. The inside piece was renewed once in two hours—outside twice a day. There was no further extension of the trouble, and at the end of twenty-four hours the improvement was very marked.

He has treated a few other cases of a similar nature with results equally as good —in fact, has had none to suppurate under this treatment.

A man past seventy had his thumb in-

fected by being cut with a piece of broken glass. He was near a hospital, where he had it dressed. From seven to ten days after the accident he had a severe chill, and his physician called Stansbury in consultation. The doctor had opened a small abscess near the first site of injury earlier in the day, but when Stansbury saw the patient his temperature was 104°, the forearm was swollen, a red streak ran from hand to axilla, there were enlarged glands above the elbow and in the axilla. The patient was a thoroughly sick man. The entire hand and arm to axilla was enveloped in gauze saturated with aluminum acetate solution 1 to 8, covered with rubber tissue and bandaged. Bier's hyperemia was induced by placing a rubber band in the axilla and fastening it over the shoulder. The patient showed marked improvement the first twenty-four hours, and in three days was considered out of danger. He made an uneventful recovery.

Similar cases could be cited to show the wonderful effect of controlling local septic infections by aluminum acetate.

In rhus poisoning it is the best instrument at one's command. When the joints in inflammatory rheumatism are acutely swollen and very painful he has seen it used with much benefit.

Yet the fact remains that the remedy is seldom used or too little known by the American physicians. It may be because it is not usually kept on hand by our American druggists and it requires twenty-four hours for its preparation. Stansbury states he has no trouble in keeping it in his office for several months, though there is some precipitation.

THE MANAGEMENT OF SQUINT IN CHILDREN.

LE FEVER states in the *American Journal of Diseases of Children* for February, 1912, that treatment is best considered under the following five heads:

1. Correction of the hyperopia removes the chief cause of the squint and is therefore of prime importance. At what age may a child be glassed? There is no definite answer to this question, but instances are very rare in which the eyes become permanently crossed in a child too young to wear glasses, if it can have proper supervision. Rarely is the patient seen before the age of one year, because the visual function is not sufficiently established before this age to call the accommodation into use for sharp vision. Young children take to glasses as they do to shoes or any other wearing apparel and give little trouble after the first week. It is Le Fever's custom to glass them when first seen unless he is convinced that the glasses will not be worn, either from pride or lack of attention on the part of the parents. A former objection to early glassing was the difficulty in knowing what to order while the child was too young to read, but retinoscopy has eliminated this difficulty.

2. Atropine may be used to suppress the accommodation and render third nerve stimulus of no avail in helping the visual acuity, and the patient will soon cease the effort, incidentally ceasing to overstimulate convergence. This method, once much employed, should be used only when glasses are out of the question, and until such a time as the child may be glassed. It must be used in both eyes two or three times daily.

3. Cure of the amblyopia is essential if single binocular vision is ever to be established. Amblyopia is a form of partial blindness, of cerebral location. It comes about as the result of suppression of the image stimulus from one eye, in an effort to be free from diplopia. All these little patients doubtless see double at first, but are too young to explain the diplopia or even to know that it is unusual. As they learn that one object is false, and it perhaps leads them to make mistakes in taking hold of objects, they begin to ignore the dimmer one—and one is always dim because focused on the peripheral retina where acuity is low. The suppression soon becomes permanent, and some effort is required to give the child diplopia even with a small light and colored glass.

The squinting eye is now unable to see well even with its fellow covered, and is said to be amblyopic. The degree of amblyopia depends somewhat on the duration of the squint. Its cure depends on the forced use of the squinting eye, by occlusion of the good eye. Occlusion may be accomplished by a bandage worn permanently, for six weeks to two years, but since this is objectionable a better plan is to have a highly concave, neutral, frosted lens fitted closely over the good eye, while the proper correction is worn on the amblyopic eye. The obscured lens must rest against the side of the nose, fit closely around the rim of the orbit, and be turned back somewhat at the temporal end. This leaves room for the lashes without allowing the child to see around it. It must be worn constantly. This is not difficult to attain in very young children, say under the age of five years, but requires close watching for a month or so in older ones. The child should be kept in the room with its mother, if necessary tied to her apron-strings, until thoroughly accustomed to the use of the amblyopic eye. It is sometimes necessary to use atropine in the covered eye as an aid to prevent peeping around the glass.

Le Fever uses this method as a routine and finds it always successful in patients seen before they are too old. It is difficult of application after the seventh or eighth year. The cover should not be removed until the visual acuity is 20/30 or better. Both eyes are then glassed with the proper correction.

4. The fusion sense must be reëstablished. If it were not originally at fault it becomes eliminated, and binocular single vision is impossible without it. In many cases it requires no treatment, resuming its function when the images can be fused. When the squint is of long standing, fusion may not be resumed without encouragement. For this purpose there are several instruments, all based on the principle of stereoscopic vision. Companion pictures are used and are either moved until they fuse, or prism aid is given until fusion takes place, while the child watches the pictures. The child is thus encouraged to see the same object with both eyes at the same time, without diplopia—*i.e.*, single binocular vision is reëstablished.

5. Operative measures are to be used only as a last resort, and will very rarely be necessary if the child is properly managed from the incipiency of the squint. In patients not seen early or not properly managed it becomes necessary to "straighten" the eyes in a mechanical way. This is done by shortening the external rectus, one or both, and tenotomizing the internus. The former is to be preferred to the latter, and in any case full correction is to be avoided, as the future tendency is outward and a divergent squint may result in adult life. The operation should not "straighten" but aid other measures to do so. No patient should be operated on until the correction has been worn at least one or two years.

SOME TOXIC EFFECTS OF SALVARSAN

Before the fifth German Congress of Neurologists, held last October in Frankfort, Professor Finger of Vienna delivered, apparently in the presence of Professor Ehrlich himself, an important address on the toxic effects of salvarsan. In his introductory remarks the Viennese syphilographer mentioned incidentally that as long as the preparation was not on the market he had not countenanced its use outside the hospital clinics, for he considered that its employment in private cases in these circumstances was unfair. After it had been placed on the market some unpleasant experiences had made Professor Finger hold his hand before advising its general use.

He considered that the only data from which conclusions should be drawn were those obtained by observation in a hospital, in a public way, where cases could be seen and followed up by several medical men, for it was easy in private practice for the sole observer to autosuggestionize himself. Dr. Finger had treated over 500 patients with salvarsan, and with salvarsan only, in

order to be able to judge the preparation on its merits, an end which could not be achieved if mercury and potassium iodide were also given. Every one admitted the good symptomatic results obtained by means of salvarsan, but he desired to deal with the complications, especially those of the nervous system.

Latterly, following the lines laid down by Ehrlich, he had used salvarsan by the intravenous method only. Among the symptoms which might follow the injection, Professor Finger enumerated the following: rigors, fever with a temperature of 40° C. (104° F.) and upwards, general malaise, prostration, headache, dizziness, vomiting, colic and diarrhea, jaundice, loss of appetite, rapid pulse, cardiac symptoms, dryness and irritation of the throat and pharynx, difficulty of breathing, psychic and motor restlessness, tremors of the knee, bladder troubles, severe sweating, conjunctivitis, salivation with salty taste in the mouth, urticaria, erythema, herpes zoster, temporary melanosis. In addition, soon after, indeed in some cases immediately after the injection, symptoms such as the following were observed: edema and cyanosis of the face, clouding of the mind, vomiting, diarrhea, breathlessness, diaphragmatic cramps, tonic and clonic contractions of the muscles of the limbs, severe collapse. He considered that these various symptoms pointed to an acute arsenical intoxication, and most observers were of the same opinion. He did not agree with the views of Neisser and Kuznitsky on this point, namely, that the symptoms were the result of the direct action of salvarsan on the spirochætæ—that is, were due to a general specific reaction produced by the setting free of endotoxins through the destruction of a large number of the parasites. That view could not explain the fact that similar symptoms had been observed after the injection of salvarsan in non-syphilitics, as in psoriasis and leprosy for instance. Moreover, the post-mortem appearances agreed with the diagnosis of arsenical intoxication. Geronne and many others had establishel this point, and Professor Finger had himself a fatal case in which the necropsy was done by Professor Weichselbaum of Vienna, who had come to the conclusion in his report that in the absence of any other discoverable cause death was due to acute arsenical intoxication. Nor did Finger accept the view of Weichselbaum of Berlin, that the symptoms were due to microörganisms in the saline solution he employed. Finger said that the saline solution he employed was always freshly prepared and sterilized by the hospital pharmacist, and he had, moreover, ascertained that even before sterilization the saline solution had been found to be practically free from germs. Although both in his own clinic and in that of others in the Vienna General Hospital, intravenous injections of saline solution to the extent of a liter had frequently been carried out for various conditions, symptoms similar to those he had described had never been observed. Moreover, the same symptoms had occurred after intramuscular injections of salvarsan, so that the saline solution could have played no part in their production.

As to the very important matter of nerve involvement, Finger stated that out of his 500 cases nerve complications were observed 4 times (9 per cent), whereas in Weintraud's 1500 only 13 (0.9 per cent) and in Wechselmann's 2800 only 10 (0.37 per cent). But Zimmern had pointed out that only 125 of Herxheimer's 900 cases were kept under observation, and it was in these 125 cases that nine instances of nerve trouble (7.5 per cent) occurred. Geronne and Gutmann had stated that only 300 of Weintraud's 1500 cases were under any continued observation, and out of these 300 cases 13 exhibited nerve symptoms (4.3 per cent). Wechselmann himself admitted that he only saw a portion of his total patients again. Finger then reviewed in detail the cases of nerve complication he had observed, and concluded that the connection with salvarsan could not, on the following grounds, be doubted:

1. The occurrence of the nerve troubles with typical regularity some six to eight weeks after the salvarsan treatment.

2. The frequency of these complications in patients treated with salvarsan as compared with the relative infrequency of such complications in patients either not treated at all or treated by means of mercury; in the thousands of cases of syphilis he has had under observation for two or three years after infection such nerve complications had been very rare. But in cases treated by salvarsan he had seen in a short period 44 cases of nerve complications in 500 cases treated by salvarsan. Benario had collected in medical literature 194 cases of nerve complications after salvarsan treatment, but such statistics were of no value unless the total number of cases treated by the two methods was known, and though the total number of salvarsan cases might be known, the number of cases treated by mercury was not known.

Finger criticized Ehrlich's view that the nerve complications were due to the survival of spirochætæ in bony canals, the spirochætæ in the rest of the organism having been destroyed by the salvarsan. There was, he said, no proof of the complete sterilization of the rest of the organism; on the contrary, Finger found that in 12 out of his 44 cases of nerve trouble, wide-spread affection of the skin and mucous membrane was present at the time of the appearance of the nerve symptoms, or followed the latter. The Viennese professor adduced other objections to salvarsan, and concluded his paper by stating that, judging from his own statistics, the secondary stage, and especially the early secondary stage, was not a suitable period for the exhibition of salvarsan, 12 per cent of his nerve complication cases occurring in the secondary stage, as against 4 per cent in the primary and 2 per cent in the tertiary stages.

On the other hand, whilst admitting that the increased number of complications observed recently after the use of salvarsan, as far as the auditory apparatus is concerned, do mean something new, Dr. Karl Beck, assistant in the ear, throat and nose clinic of Professor Kümmel in Heidelberg, points out that whether these are due to salvarsan or to syphilis is another matter. In any case he found that, whereas only one such instance of auditory complication has been observed during a period of five years in the ear clinic, five such cases had come under notice in the previous six months after the salvarsan treatment. Dr. Beck thought he could clear up the matter by injecting salvarsan in suitable doses into the vein of the tail of white mice, and then, after a time, decapitating the animals and cutting sections of embedded skull and contents. The results were negative. Dr. Beck admits, too, that such experiments on animals cannot afford conclusive evidence as to what happens in the human organism. There are differences which cannot be ignored. The fact remains that auditory complications in the Heidelberg clinic are far and away more common since salvarsan has been used. This, at any rate, confirms the opinion expressed by Professor Finger of Vienna.—*British Medical Journal,* Jan. 27, 1912.

HEXAMETHYLENAMIN IN THE TREATMENT OF BRONCHITIS.

VANDERHOOF in the *Journal of the American Medical Association* of February 3, 1912, reminds us that hexamethylenamin is recommended as a remedy of value in cases of acute colds and in patients suffering from acute and chronic bronchitis. The drug should be given in large doses accompanied by the copious drinking of water. In the ordinary cold, treatment with hexamethylenamin shortens the stage of coryza and greatly modifies or entirely prevents the succeeding bronchitis. It also acts as a prophylactic against ensuing infection of the accessory nasal sinuses. It is our best remedy in acute bronchitis. Certain cases of chronic bronchitis respond to treatment by hexamethylenamin with gratifying alacrity, while others do not. In the latter instance it is presumed that structural changes have occurred in the walls of the bronchi, associated with thickening and calcification of the cartilages, fibrous membrane, and muscular coats so as to preclude the hope of successful treatment by any remedy.

SODIUM CACODYLATE IN SYPHILIS.

SPIVAK in the *New York Medical Journal* of March 2, 1912, reports a study of the results in forty-three cases from the Genito-Urinary Department of the Jefferson Medical College Hospital, in which he used sodium cacodylate. The following conclusions are reached:

1. Arsenic in the form of sodium cacodylate is useful in syphilis. While its action is not as rapid as that of salvarsan, it accomplishes results not unlike those of salvarsan. It is very reasonable that it should, because the arsenic content of "606" is thirty-four per cent, while the arsenic content of sodium cacodylate is forty-eight per cent.

2. Being sure that the salt is pure, and making a solution of it fresh every day, it is non-poisonous to the human system, even in doses as high as five or six grains injected daily for three weeks, or even for a month; in other words, the human system can take in 100 grains of sodium cacodylate in three weeks with no signs of arsenical poisoning.

There is no albuminuria, no signs of ocular disturbance; the only untoward effects ever noticed were slight shooting pains in the muscles, particularly those of the shoulder, and sometimes this reached to a muscular spasm. There is no reaction at the site of injection.

3. The drug should be used for effect, beginning with three grains daily and increasing as results are noted. The drug is cumulative in action, as improvement continues for a week or so after the injections cease.

4. The best results are seen in early syphilis. It has a marvelous effect on the initial lesion and on the maculoroseolar eruptions. The action on the papular syphiloderm is somewhat slower, but in large doses is effective. The drug has practically no effect on the adenopathies. Enlarged cervical, epitrochlear, and inguinal glands persist in spite of massive doses. Mucous patches and condylomata clear up readily without any other treatment. The drug has a splendid alterative effect and can be used for that alone in the course of syphilitic treatment. All patients, whether their lesions were benefited or not, speak of a sense of well-being, of added strength, of a better appetite, and even of an increase in weight. On the rupia and tertiary lesions, sodium cacodylate has practically no effect.

5. Immediately after the patient has had his course of injections, he should be placed on mercury, otherwise the external manifestations recur. It would even be well to alternate a course of mercurial treatment with a course of cacodylate injections. The two drugs seem to be synergistic; one has a stronger effect in the presence of the other.

6. The effect of the drug on the Wassermann reaction is practically *nil*.

7. The drug should prove to be a useful adjunct in the treatment of syphilis, especially where salvarsan cannot be used, either for financial reasons or through some physical condition of the patient. Sodium cacodylate is cheap, easily prepared, and very easy to administer.

CURIOUS CASES OF INCOMPATIBILITY.

In a recent issue of an American pharmaceutical journal attention is drawn to the fact that an incompatibility between a medicine given internally and one applied externally may cause undesirable epidermal manifestations. Reference is made to a case in which hydrogen peroxide was applied externally, while potassium iodide was given internally. The result was a severe burning of the skin, the cause of which was not discovered for some little time. In another instance a colorless tincture of iodine, taken internally, in conjunction with an ointment of ammoniated mercury, externally applied, caused severe irritation of the skin, which was attributed to the toxic action of mercuric iodide. Other illustrations might be given of the importance of avoiding such cases of incompatibility. Thus, sulphur given internally and a solution of mercury used externally may be expected to cause a deposit of black mercuric sulphide in the skin. These instances are of great interest to physicians, as they

afford an explanation of phenomena which might sometimes be attributed to idiosyncrasy or some other cause, except the right one.

Within the last few months an interesting case arose at St. Paul, Minn. A lady had used a certain advertised face-cream for the purpose of removing freckles, and she was horrified to find that her face became variegated in color from yellow to brown and then to black. Since many creams of this nature contain some form of mercury it is probable that the trouble was caused by a chemical reaction between the ingredients of the cream and some medicinal substance she may have been taking at the same time. These illustrations emphasize the danger of indiscriminate self-medication; they further show that care should be taken not to use mercurial creams when undergoing certain courses of internal medication. The apparently harmless sulphur lozenge or compound licorice powder may cause much chagrin and discomfort, if not danger, when taken into the system at a time when a favorite brand of toilet cream is being used to beautify the complexion.—*Lancet,* March 2, 1912.

PHENOLSULPHONEPHTHALEIN IN RELATION TO RENAL FUNCTION IN HEALTH AND DISEASE.

Rowntree and Geraghty in the *Archives of Internal Medicine* of March 15, 1912, reach these conclusions:

1. The absorption of phenolsulphonephthalein following injection into the lumbar muscles is better than the absorption from the gluteal injection, while the latter is superior to subcutaneous injection.

2. Administration into the lumbar muscles is the method of choice.

3. Experimentally those diuretics that stimulate the renal cells to increased activity cause some increased secretion of phenolsulphonephthalein, while those that act mechanically produce no increased secretion. Clinically diuretics do not influence the phthalein output.

4. Experimental evidence seems to indicate that phenolsulphonephthalein is excreted mostly by the tubules, but probably also to a slight extent by the glomeruli.

5. The renal cells display a striking specificity in the excretion of phenolsulphonephthalein.

6. The phenolsulphonephthalein as used by them has many advantages over all other functional tests so far proposed.

7. It is better adapted for use as a functional test than any other drug previously employed for the same purpose, on account of its early appearance in the urine and the rapidity and completeness of its elimination by the kidney and the reliance to be placed on its findings.

8. The method of quantitative estimation of the amount of drug excreted is simple and exceedingly accurate.

9. It is of immense value from a diagnostic and prognostic standpoint in nephritis, inasmuch as it reveals the degree of functional derangement in nephritis whether of the acute or chronic variety.

10. In the cardiorenal cases so far studied the test has proved of value in determining to what degree renal insufficiency was responsible for the clinical picture presented.

11. The test has proved of value not only in diagnosing uremia from conditions simulating it, but has also successfully indicated that uremia was impending when no clinical evidence of its existence at the time was present.

12. The test has proved of great value in revealing the true renal condition in cases of urinary obstruction. It is here of more value than the urinary output, total solids, urea, or total nitrogen, and enables the surgeon to select a time for operation when the kidneys are in their most favorable functional condition. The improvement in the renal condition in cases of urinary obstruction following the institution of preliminary treatment is strikingly indicated by this test.

13. In unilateral and bilateral kidney disease the absolute amount of work done by each kidney as well as the relative proportion can be determined when the urines are obtained separately.

PROGRESS IN ORTHOPEDIC SURGERY.

BRADFORD (*Boston Medical and Surgical Journal*, Jan. 4, 1912) quotes from the current literature to the effect that living bone deprived of periosteum, if transplanted, stimulates the regeneration of the periosteum of the bone into which it is implanted.

Experiments with autoplastic or homoplastic bone plugs driven into the femur and tibia to stiffen flail joints have shown that both living and dead bone tissue dies when transplanted and is gradually absorbed, and, as a rule, is sooner or later thrown off, although in certain cases large pieces of bone or portions of a joint have apparently been by healing retained in the transplanted place.

Transplantation of the upper end of the fistula was performed seven months after the removal of the diaphysis of the tibia. Nine months later the lower end of the fibula was inserted into the lower epiphysis of the tibia. Two years later a skiagraph showed great thickening of the transplanted bone.

Lexer has shown a case in which a knee-joint transplantation had been performed three years before, and a second one in which the operation had been done five months before, with the result of a functioning knee. In a third case the upper third of the tibia with the joint surface was removed and a corresponding piece from an amputated limb was inserted. One and a half years later the action of the joint was reported as normal.

Judet as the result of experimental investigation found that transplantation of the whole knee-joint, the cartilage having been destroyed, resulted in a stiff joint. The amputation and reimplantation of the leg of a dog, the operation having been done in the middle third of the thigh, resulted in ununited fracture with atrophic ulcers three months later, though the circulation was good.

Steida reports three cases of free bone transplantation. He comes to the conclusion that bone can be used only for small defects, that the continuity of the bone should not be interfered with by the insertion of ivory or nails. To secure the life of the periosteum he recommends the transplantation of the periosteum with a thin portion of bone, but the transplanted periosteum-covered portion of bone needs a support, and more bone substance should be transplanted with the periosteum. This furnishes a support for the development of new and strong bone.

Lexer notes that skin flaps, when transplanted, are found to heal better without fat than with it; it is important that asepsis should be thorough and that the wound be allowed to bleed somewhat so that the tissues contain a sufficient amount of blood. The skin of animals cannot be used to take the place of the skin of man, at least for the purpose of covering defects. Fetal skin flaps heal better than those from an adult. By joint transplantation, toes can be substituted autoplastically for the fingers. The attempt to transplant a whole limb has not been successful, though fascia, bone, and joint have survived well. The skin and muscles have not.

Transplantation of fascia is reported for the cure of a drooping scapula from muscular paralysis. A 20 cm. piece of fascia, 4 to 5 cm. wide, was taken from the fascia lata and inserted in the middle scapular region above the spine and fastened to the tissues of the back muscles and deep spine muscles close to the spinal column. During the suturing the shoulder was pressed by an assistant into a normal position. A complete cure is reported to have taken place.

The success of tendon transplantation, especially the periosteal method when silk artificial tendons are used, depends upon a number of important details. The most important points to be observed are absolute asepsis, exact placing of the thread upon the tendon, the passage of the tendons through the subcutaneous fat or tissue, and exact suturing on the periosteum of the transplanted tendon with proper tension, and especially a careful after-treatment.

Snapping finger depends most frequently upon an alteration in the tendon sheath or tendon, appearing in the form of a fibroma,

fibrous thickening, or vascular tumor of the tendon, or as an alteration in the tendon sheath, a narrowing through fibrous bands and tumors, granulation tissue, etc. Less frequently the symptoms are due to alteration in the joint, arthritic changes, roughness, etc.

Snapping hip is usually due to the slipping of the cristofemoral tissue over the trochanter. There is at times an actual slipping of the head due to an alteration of the posterior edge of the acetabulum. For the cure of this condition a posterior median incision was made over the lower border of the gluteus maximus, the semimembranosus was exposed, and a tendinous slip was taken from its outer border, still attached above to the tuber ischium. A second incision over the upper side of the trochanter was made and a hole drilled through the latter. The tendinous slip from the semimembranosus was then drawn through this hole, and sutured subperiosteally to the outer aspect of the trochanter. The patient after three months had no return of symptoms.

Codivilla is of the opinion that section of nerve roots in infantile spastic paralysis is to be undertaken only in patients with strong muscles, normal trophic condition, and where the resection is not technically too difficult. It is easier in the dorsolumbar rather than the lumbosacral region.

Biesalski believes that only the most severe cases should be subjected to this operation. The cases that are able to walk even with difficulty should not be operated upon, nor should those in whom the spasm is not constant when the patients are not in bed.

He selects for the site of operation the first sacral rather than the second, in order that the cut shall not come too near the anus. Tenotomy of the muscles is often necessary, and thereafter careful muscle training.

Allison records as a substitute for nerve section the injection of 60- to 80-per-cent alcohol into the peripheral nerves, and reports much betterment following this procedure.

GASTROJEJUNOSTOMY.

Mayo (*American Journal of Surgery*, January, 1912) regards as one of the most important contributions to the technique of gastrojejunostomy the application and the popularization by Moynihan of the holding clamps for bringing the jejunum and stomach in apposition to prevent soiling the field of operation. Since the no-loop operation is done upon parts somewhat deeply situated, the clamps are a convenience, and they have retained their popularity in nearly all of the American clinics, although they have been abandoned in many foreign clinics because of the occasional hemorrhage from the suture-line after they were removed. This hemorrhage appears as a hematemesis or melena some hours after the operation, as the blood accumulates in the gastrointestinal tract. In a few cases in the writer's early experience he supposed that the bleeding came from the ulcer and was due to operative manipulation, until he was obliged to reopen the abdominal incision in two cases for the purpose of checking hemorrhage within eighteen hours after operation. The stomach was brought up and its anterior wall opened by a longitudinal incision, exposing the ulcer, which was found dry in both cases, the hemorrhage coming from the posterior suture-line of the gastrojejunostomy.

In order to insure against this accident Mayo began using a third row of catgut sutures, uniting the mucous membranes along the posterior suture-line. The accident is not so likely to happen on the anterior wall, and since applying this muco-mucous stitch to the posterior line there has been no bleeding following gastrojejunostomy in any of his cases.

Moynihan and Littlewood advised trimming off the redundant mucosa of the margins of the incision uniting the stomach and intestine. The writer has usually followed Ochsner's technique in this respect—that is, placing the second row of sutures before opening the cavity of the stomach and jejunum, thus preventing the posterior suture-line from being soiled. The mucous

coats of the stomach and intestines are opened near the outer margin, which throws a little flap of redundant mucous membrane toward the suture-line, and this is brought together with the third row of sutures mentioned above. However, should there be redundant mucosa it will be wise to trim it away. Since silk or linen is slow to be cast off, Mayo uses chromic catgut for the inner and linen for the outer row of sutures. He has seen silk sutures hanging in the gastrojejunostomy eighteen months after operation. In gastrojejunostomy for carcinoma, however, he uses linen for both layers of sutures, because union is slow in these cases and the suture must last long enough to insure firm union.

There has been a great deal of discussion as to the direction the gastrojejunostomy should take on the posterior wall of the stomach. The writer agrees with Moynihan that too much attention has been paid to this detail. For a number of years in the clinic at St. Mary's Hospital the opening has been slightly oblique in direction, from right to left, and from above down (vertical oblique). Moynihan uses a vertical opening, and in the few cases in which the Mayos have used this opening the results were satisfactory.

A mesocolic band often extends downward upon the upper jejunum at its origin. If such band or bands exist they should be trimmed backward, since, if the free portion of the jejunum beyond the band is used, a considerable loop of intestine will lie above the anastomosis and the gastrojejunostomy will not be of the no-loop variety. It can be stated within reasonable limits that the closer the gastrojejunal opening is made to the origin of the jejunum, the less danger there will be of bile vomiting.

In the average case in which gastrojejunostomy is performed, the transverse mesocolon is torn through in the avascular part near the center of the vascular loop of the middle colic artery. Occasionally the transverse mesocolon will be found to have two vascular arcades, due to the division of the middle colic vessel into a right and left branch; the right anastomosing with the right colic and the left with the left colic artery. In operating, the larger scale is usually chosen, but distinct preference is given to the left arcade, other things being equal.

The torn margins of the gastrocolic omentum in the average case should be fixed by three or four sutures to the suture-line of the gastrojejunostomy. The sutures should pick up the peritoneum of the mesocolon a quarter of an inch above the rent, and after fastening down to the suture-line, the torn margins should be neatly tucked in so that no opportunity will be afforded for the formation of secondary adhesions. If the mesocolon be fat the torn margins of the opening should be attached to the stomach at least three-fourths of an inch from the gastrojejunostomy with three or four sutures to avoid the formation of a ring or collar-like band at the site of the operation. Two cases have given the writer trouble from this cause.

Gastric ulcers should be excised and duodenal ulcers infolded with sutures. In some cases it is impossible to excise a gastric ulcer without great risk, and in the occasional case in which the duodenal ulcer is already roofed in by adhesions, it may not be advisable to infold it.

Closure of the pylorus has been advocated as a routine procedure following gastrojejunostomy. Sutures placed in the outer wall of the stomach and duodenum in such manner as to infold the pylorus produce mechanical obstruction only temporary in character. Clinically and experimentally, nothing short of complete division of the pylorus, turning in the end of the stomach and the end of the duodenum, can be expected to give permanent results. Occasionally Mayo practices some method of closure of the pylorus, but as a rule, if the indications for gastrojejunostomy are clear, the operation will be successful without closure, and if the choice of operation has been bad for the patient, it will not be improved by the addition of closure of the pylorus.

The preparation of patients for gastro-

jejunostomy is simple. If there be marked obstruction with food retention it will be wise to empty the stomach twice a day with the stomach tube for a few days until it recovers its tone.

The patient is admitted to the hospital about 2 o'clock the day preceding the operation. At 3 o'clock one to two ounces of castor oil is given, and at 5.30 a light supper. The castor oil is very effective, and, unlike salines, does not produce watery, exhausting stools. It is also more thorough, and if an excess be given, it merely passes off. A bath is given about 8 o'clock in the evening. In the morning the field of operation is carefully shaved, using water without soap, and allowed to become dry. If the patient is in an exhausted condition 1/6 grain of morphine is given. Ether is administered by the drop method. The field of operation is cleaned with benzine, which removes all grease, dead epithelium, and extraneous matter. The benzine dries rapidly and is followed by a coating of three and one-half per cent solution of tincture of iodine, which should be made fresh within a week, since old tincture of iodine undergoes chemical changes that are irritating to the skin.

After the operation the patient is placed in the semisitting posture on a buttock rest, which is merely a sling of gauze wrapped with sheet and fastened to each side of the head of the bed. The patient is propped up by pillows and kept in this position by the buttocks resting in the sling. During the first night hot water is allowed in moderate amounts, an ounce or two at a time, unless the patient be nauseated. If there be much pain a hypodermic injection is given of 1/100 grain of atropine and 1/6 grain of morphine. If greatly debilitated, the patient is given 10 to 15 minims of camphorated oil, hypodermically, from four to six hours apart.

Immediately after placing the patient in bed rectal salines by the Murphy method are commenced, and four to six quarts are given during the first twenty-four hours. Patients are allowed albumen-water and a little weak tea the day following the operation, and on the second day cereals and soups are given. At the end of the week a moderately full diet is permitted, advising the patient to masticate the food thoroughly.

Patients are up at the end of a week, and usually leave the hospital in from ten to twelve days.

An acute attack of dilatation of the stomach with great distress, vomiting of bile, etc., may occur along in the second or third week. Emptying the stomach with the stomach-tube two or three times a day for several days is the most effective remedy for this condition.

Occasionally the patient will have distressing symptoms in the stomach not due to bile, coming on some weeks after operation. If these symptoms are mild they may be relieved by giving an ounce of olive oil before meals. In the more severe cases rest in bed for a few days on a milk diet will almost always be efficient.

TREATMENT OF CLEFT PALATE.

MURRAY (*Lancet*, Nov. 25, 1911) advises closing harelip at the age of three months, and closing the palate by Langenbeck's method when the child is three years old. He is opposed to the Lane turnover flap method on the basis that it leaves a rigid soft palate, and states that in the exhibition of late results there can be no doubt as to the respective merits of the Lane as compared to the ordinary procedure. When such demonstration was held there were several cases in which a complete cleft of the hard and soft palates had been closed by the ordinary plan during childhood, and in which the speech was natural, and the words "British constitution" could be repeated clearly and distinctly. On the other hand, in any case in which the cleft had been closed by Lane's method, articulation was so very imperfect that it was difficult to understand what was said. In all cases in which articulation was distinct the soft palate was seen to be normal in form and in movement; in all cases in which Lane's method had been used the soft palate was short, stiff, and stationary, accounting for

the defect in articulation, for which, unfortunately, no remedy can be supplied. The evidence obtained from patients who had been operated upon was overwhelmingly in favor of closing the cleft in the ordinary way, whilst the extremely unsatisfactory articulation of patients operated upon by the turnover flap method proved that it is wrong in principle, defective in practice, and to be utterly condemned.

With Brophy's operation the writer was not at all successful. In one case, instead of the bones sliding toward each other on the same plane, and so obliterating the fissure in the palate, they hinged at the side of the fissure in such a fashion that any further pressure would only have resulted in the alveolar margins of either side meeting in the middle line.

As to the Langenbeck or ordinary operation, when the fissure is narrow and involves the soft palate only, operation may be performed with success during infancy, but it is better to wait until the second or third year. The author prefers to operate in the summer months, and considers the cleft palate season opens on May 1 and closes October 1.

The mouth and nose should receive daily careful cleansing. Chloroform is preferred as an anesthetic. The child should be lying on the back with the head and shoulders raised. The whole cleft is closed at one sitting. The edges of the fissure are pared obliquely, thus securing broad raw surfaces. The blood and mucus are sucked away from the mouth and throat by a glass syringe which has a piece of rubber tubing attached. In order to be quite sure that the edges of the wound are everted and raw surfaces brought together, one or two button sutures are employed. Silver wire and fine silkworm-gut are used for suturing, and at times to relieve tension the writer surrounds the flaps with tape impregnated with Horsley's wax. After the operation the stomach is frequently washed out, the stomach-tube being passed through the nostril. The after-treatment is almost entirely a question of nursing, the chief points being to keep the mouth clean and to maintain the child's general health. In children over four years of age nasal feeding may with advantage be used during the week following the operation, but in younger children it is impracticable. In ordinary mouth feeding milk should not be given, for it clings to the stitches, is difficult to wash away, and undergoes fermentation changes. Half an hour after each feeding the palate should be cleansed by syringing with warm water. If the child will not permit this, a drink of water must be given at the conclusion of each meal.

CURE OF FISTULA IN ANO WITHOUT INJURING THE SPHINCTERS.

MACKENZIE (*Northwest Medicine,* November, 1911) describes an ingenious and successful method of curing anal fistula without injury to the sphincter.

The patient is prepared in the most careful way as for any major surgical operation on these parts. The sphincter is completely dilated. The internal orifice of the fistula is minutely examined, and with a proper instrument is very cautiously dilated. After dilatation the mucosa is uplifted and pared with curved scissors in the direction of the long axis of the bowel, and with a small knife or fine scissors the circumference of the muscular layer is then trimmed and vivified. If need be, the opening may be incised or split in the direction of the circumference of the sphincter. After this has been done a few interrupted sutures of iodized catgut are introduced in the muscular layer at right angles with the sphincter, tied and divided. The mucous membrane is then sutured with interrupted catgut or silk sutures, properly spaced. If more than one orifice exists, of course, the same procedure is followed.

A flap is made on the side involved, beginning by making a small semilunar incision just beyond the border of the external sphincter, dividing the parts down to the fistulous track, the latter being divided flush at its point of emergence from the bowel. The incision is extended from both ends of the first incision outward and made

large and deep enough to include, if possible, under the eye all available and accessible branching tracks. The exigencies of the case may require sometimes the lifting of one or other of the buttocks in its entirety. In one case it was necessary to make a complete flap and partial resection of both buttocks in order to reach the deepest and most distant branching tracks.

The opposite side of the rectal opening is now attacked, and, after all doubtful tissues have been removed, the rectal walls are infolded once or twice over the line of suture within. The greatest care must be exercised in removing all doubtful tissues. If need be, the cautery could be used for their complete destruction, or substituted entirely for the suture of these parts.

The exposed flap is next attacked with knife or large pointed scissors curved on the flat, and the original track, its branches, and the entire fistulous zone, including every branching track, resected. Careful search will be made in the ischiorectal fossa and perirectal spaces for any concealed tracks.

The whole field is then carefully flushed with normal salt solution, and, if need be, antisepticized and the fat layers sutured with buried catgut so as to close all dead spaces. In many cases the entire wound may be closed as in the case of breast amputation, or a small drain may be left for twenty-four or forty-eight hours.

A PROTEST AGAINST THE INDISCRIMINATE USE OF THE ORGANIC COMPOUNDS OF SILVER IN OPHTHALMIC PRACTICE.

THEOBALD (*Johns Hopkins Hospital Bulletin,* November, 1911) states that whatever be the explanation, whether due to their chemical composition, the greater freedom with which they are used, or to their supposedly greater penetrating power, there can be no doubt that the organic compounds of silver—at all events, those with which the author is familiar, protargol and argyrol—are responsible for many more cases of conjunctival argyria than ever was, or is, silver nitrate.

Before these compounds came into use, argyria of the conjunctiva was a rare condition—practically never seen except in old cases of trachoma. Now it is relatively common, and is met with in acute affections, in which the silver treatment has been of comparatively brief duration.

He states that he has never produced a case of ocular argyria from the use of silver nitrate, and expresses regret that he cannot say the same as to the newer silver compounds. In several of his cases of gonorrheal conjunctivitis in the adult decided staining, especially of the bulbar conjunctiva, has resulted from the employment of protargol, and the same has happened in a case of acute trachoma after only a few weeks' treatment.

Theobald states that he has also observed a number of cases of similar character which have occurred in the practice of his confrères. A well-known physician of Baltimore was given a five-per-cent solution of argyrol for a mild chronic conjunctivitis. As its action was beneficial, his wife—in need only of glasses for the correction of a decided fault of refraction—also began to use it, and the two continued to employ it, p. r. n., until the physician had acquired one of the most marked cases of argyria the writer has ever seen, and his wife's eyes had become conspicuously stained.

It is, therefore, not against the use, but against the indiscriminate—or, perhaps, indiscriminating—use, of the organic silver compounds that he protests. When a remedy is at hand that is, at least, as efficacious as they are in the condition to be dealt with, that is cleanly, and that cannot by any possibility produce the untoward consequences to which they not rarely give rise, common sense would seem to dictate that it be given the preference.

These observations apply with especial force to the now almost, it would seem, universal habit, particularly among the younger generation of ophthalmologists and of general practitioners as well, of employing argyrol or protargol in the treatment of acute and chronic catarrhal conjunctivitis. This practice, in the writer's

judgment, and it is based upon abundant observation, is wholly indefensible, since we have a remedy—in a collyrium containing half a grain of zinc sulphate and ten or twelve grains of boric acid to the ounce—that is cleanly, and that is not simply as efficacious, but is more surely and more promptly efficacious in these conditions than either of the silver compounds mentioned.

TREATMENT OF RINGWORM OF THE SCALP.

RIDDELL (*Glasgow Medical Journal,* February, 1912) deprecates the routine use of *x*-rays because in the ionic method of applying antiseptics we have a means of carrying the drug right into the hair roots, and thus destroying the vitality of the spores *in situ*. The appliances necessary are simple and inexpensive, consisting of a small switchboard and electrodes. When a public electric supply is not available, a battery of twenty or thirty cells is sufficient. The procedure is as follows: The child's head is shaved, or the hair cropped short all over. A solution of the drug to be used is rubbed well into the affected parts. Folds of lint (10- to 16-ply) are soaked in the solution and applied evenly to the surface; over this the electrode is placed and secured by a few turns of bandage. It is important that the lint should overlap the diseased area, and that it should be thoroughly moistened.

The electrode may be made of any convenient metal. Copper gauze is pliable and adapts itself easily to the surface. It should be large enough to cover the diseased area, and the contact both between the head and the lint, and between the lint and the electrode, should be of equal pressure all over.

One pole of the supply is attached to the electrode, which is on the head; the other is connected to a water-bath in which the child's arm or foot is immersed, or to a large well-moistened pad, which may be bound to the arm or leg.

The current is now slowly turned on, and gradually increased until the patient is beginning to feel slightly warm on the scalp. After a few minutes it will be found that the current can be increased without discomfort to the patient, and it is the object to increase it as much as possible short of actual discomfort. When the area under treatment is large, a child usually allows 10 to 20 ma. to be used.

Each sitting should be as prolonged as possible; from 40 to 50 minutes at one sitting with a given current is of greater value than three or four of only fifteen minutes with the same current. This arises from the nature of transference of ions.

When an electric current is made to pass through a solution of certain substances it does so in accordance with definite physical laws. The dissolved compound is split up, and that part representing the metal (in a salt, for example) travels away from the positive pole, while that representing the acid radicle travels away from the negative pole. The particles continue to travel only so long as the current is flowing, and therefore the more prolonged the sitting the deeper into the tissues will the drug travel.

The solution used is one per cent of mercuric chloride or one per cent of iodine in water, a sufficient quantity of potassium iodide being added to make the iodine soluble. Chloroform, iodoform, and glycerin interfere with ionization. The quantity of the drug carried into the skin depends not upon the concentration of the solution, but upon the strength of the current and the duration of the sitting, and for a given current-density different elements have not the same rate of transference.

The treatment should be repeated two or three times a week. It is well to have the head washed daily or every other day with an antiseptic, such as sulphur, B-naphthol, and green soap mixture commonly prescribed. If oil is used on the scalp it must be thoroughly removed before making ionic applications.

The average number of sittings for each of the author's cases was thirteen. When the sittings were continued for half an hour or more the average number was nine. Three cases had a very large number of treatments—two over fifty, one sixty.

In favor of the *x*-ray it may be said that one or two visits are all that are required, and failure is almost unknown. The child is, however, shedding hair for weeks, and it is practically a certainty that a small percentage of children are going to have permanent bald patches left on their heads.

In favor of the ionic treatment is the absolute safety, both as to possible late effects and baldness, and the simplicity of application. The treatment can be carried out by the family physician.

A NEW OPERATION FOR FIXATION OF THE KIDNEY.

BELL (*New York Medical Journal*, Jan. 20, 1912) describes an ingenious modification which theoretically, at least, offers some advantages. His modification is incident to the fact that a combined Edebohls and Isaacs operation which he formerly used, by which the kidney has been suspended from the last rib to the split and inverted capsule and has been sutured to the lumbar muscles, has given him a large percentage of failures. The suture he advocates is as follows:

An incision three inches in length is made two inches external to the spinous processes of the lumbar vertebræ, vertically downward from the lower border of the twelfth rib, through the skin and fascia. The fibers of the outer portion of the erector spinæ are bluntly separated and the quadratus lumborum is incised. We are now down to the posterior layer of the transversalis fascia. This is incised carefully about one inch from its spinous attachment and the divided edges are caught with artery forceps. The kidney is then enucleated in the usual manner and the perirenal fat is excised posteriorly, internally, and externally, but not inferiorly. It is important that the fat for at least half the depth of the kidney be removed. Two sutures, after the manner of Brödel, are now placed at either pole of the kidney at the internal and external borders, the needle being left on each. For the present these are not tied.

Two parallel incisions, one and one-half inches in length and one inch apart, are now made longitudinally through the renal capsule, and the intervening capsule is elevated from the cortex by blunt dissection.

The kidney is now returned to its fossa and is held in position by means of gentle traction made by an assistant upon the untied sutures. A strip of the transversalis fascia corresponding in width to the length of the elevated portion of the capsule is now cut and passed as a strap beneath it and is sutured with chromicized catgut to the corresponding portion of the spinal attachment of the fascia.

The kidney, now suspended by a strap of fascia, is further reënforced by passing the Brödel sutures through the quadratus lumborum in the usual manner and tying them over the muscle. The wound is closed in the orthodox manner. The patient is kept in bed three weeks, until adhesions have formed betwen the fascia and the capsule and cortex of the kidney.

While this operation takes advantage of the old method of suspension for the purpose of holding the kidney in position temporarily while the process of healing is going on, at the same time it places the organ in a suspensory ligament from which it is almost impossible for it to escape.

MOBILE CECUM AND CHRONIC APPENDICITIS.

WILMS traces the attacks of pain grouped under the term of chronic appendicitis to the following disturbances: (1) Adhesions in the neighborhood of the appendix or ascending colon, causing traction on the intestine when it is full; or (2) kinks or twists of the intestine at the caput coli or hepatic flexure, causing transient obstruction. Cæcum mobile, or the condition termed by other writers as typhlospasm, typhloatony, or typhloectasia, has nothing whatever to do with these disturbances, these as a rule being due to the stagnation of intestinal contents over a long period of time in the cecum. The contents may remain in the cecum for twenty-four hours or

more, as demonstrated conclusively by Roentgen pictures. Their consistency becomes thick, and the rest of the colon is forced to exert greater power to push these thickened contents on. The patients suffer with habitual constipation. As a result of this stasis, an antiperistaltic action takes place in the colon, together with a spastic condition due to the irritation, thus causing the attacks of pain. These spastic contractions, which go together with a lengthening of the cecum, result in traction on the movable cecum and its mesentery, or when the appendix and its mesentery are relatively short, traction is brought on the mesenteriolum. The pain of chronic appendicitis is thus traction pain, aggravated by slight inflammatory changes in the environment of the mesenteric nerves.

Excepting palpation (gurgling tumor), the diagnosis is positively established by means of an *x*-ray picture. Wilms recommends three pictures, 4, 8 to 10, and 24 hours after the administration of bismuth. His results with cecopexy show that not only is the pain relieved, but that the chronic obstipation also is cured. Not less than 75 per cent of the operated cases had after this treatment normal bowel movements, whereas formerly their bowels would move only after cathartics. In uncommonly large ceci, Wilms recommends, instead of cecopexy, a shunting of the colon by anastomosing the small intestine lying over the cecum to the transverse colon. Only those cases should be operated on in which the obstipation has not yielded to thorough internal treatment—*i.e.*, in severe cases accompanied by pain.

Dr. Sonnenberg observed that the surgical treatment of obstipation and its complication is still upon an uncertain foundation. Mobile cecum is not frequent, by itself not pathological, and the methods of anchoring it vary considerably. The diagnosis by the *x*-ray picture is not trustworthy, as the form, location, and distribution of the bismuth cecal shadow depend entirely upon how soon after the ingestion of the mixture it is observed. The accumulation in the beginning of the large intestine in itself is not pathological. The findings mentioned by Wilms can be observed in other forms of obstipation as well as in healthy individuals. The quality and the quantity of the ingested substance must be borne in mind in order not to confound physiological with pathological phenomena. Cæcum mobile can be recognized only when clinical evidences are present, pointing to catarrh and inflammation, from the seat of a typhlocolitis. Then there are present symptoms of catarrh of the large intestine, with varying obstipation and diarrhea, accompanied by typhloatony. Altogether a patient is better off with a cecum mobile than one with a fixed cecum. It is difficult to see what advantage is gained by cecopexy. Unquestionably, many patients who have typhlocolitis are operated upon for appendicitis, which is not present. On the other hand, many of these patients who are operated upon for chronic appendicitis, by their appendectomy are cured of their typhlocolitis. Typhlocolitis belongs to the domain of internal therapeutics, and only in extraordinary cases is operation called for. It is usually only part of the inflammation of the large gut, and the cause is often elsewhere—for example, at the splenic flexure, where obstruction is present, with damming back of the colonic contents. We are not justified in making a clinical entity of mobile cecum and its symptoms, and unless we are more familiar with the physiology of the large intestine than at present we should avoid shunting, resections, etc. The speaker has not seen much benefit derived from these operations.

Klose said that since 1904 the Frankfort Surgical Clinic has recognized the existence of cæcum mobile as described by Wilms. During this time 154 cases have been operated on, with a complete cure in 89 per cent. Klose does not agree with the standpoint of Wilms that the mechanical interference with the progression of intestinal contents due to torsion of the hepatic flexure plays the greatest rôle in these cases. One gets secondarily hypertrophy and atrophy of the walls, inflammatory changes in the region of the cecum and as-

cending colon, as well as chronic torsion and displacement of these organs. The habitual torsion is, according to observations, the most important and frequent cause of acute appendicitis. Cecal torsion may also give rise to floating kidney and infective pyelitis.

Klose reports experiments on the cadaver to support this mechanical theory. The cecum and entire ascending colon are fixed to the lateral abdominal wall, in order to prevent rotation. More recently he has gone so far that, in marked cases of displacements and severe enteroptoses, he has fixed in place the entire large intestine, liver, and spleen with good results.

Dr. Goebell since 1908 has performed 15 cecopexies and three cecoplications for cæcum mobile. Only those were grouped under this head in which there was a freely movable cecum, and where there existed at the juncture of the cecum and ascending colon adhesions with occasional kinks.

The cecopexy was done by sewing the lateral band to the transverse fascia by means of silk thread. Only when the caput coli was very distant from the ileocecal junction, after doing an appendectomy, a plication of the cecum was performed. Of 15 operated patients, 10 were entirely cured. Good results were obtained only when the cæcum mobile was the primary cause of the obstipation.

Dreyer stated that in order to clear up the doubtful subject of cæcum mobile, two questions must be answered: (1) Is a mobile cecum pathological? (2) Does the Wilms cecopexy restore the physiologic condition?

In answer to the first question, he notes that out of a large number of autopsies he has found in 67 per cent a movable cecum. It seems scarcely possible that this condition can be pathological and, as Wilms states, the primary cause of obstruction. In answer to the second question, all know that the pregnant uterus in its rise displaces the entire intestines upward. In the latter months of pregnancy the cecum is found far above a line joining the anterior superior spines of the ilium.

With the Wilms cecopexy, the head of the cecum is fixed deep in the pelvis so as to reach the outlet, in order that, as Wilms describes it, the retroperitoneal pocket shall take up all of the "long" movable cecum, so that no kinking can take place. The danger here is that during pregnancy a loop is formed, with the ileocecal valve as the angle and the intestine as the parallel arms. This would make great difficulty for the passage of fecal matter. It is interesting to note that of the 52 cases Wilms has operated on for cæcum mobile, 75 per cent were in women. In the autopsy room only 11 per cent of women were found to be free from cæcum mobile, but never was the cecum fully movable to the site of a possible cecopexy. The clinical relation of cæcum mobile to chronic appendicitis is not yet sufficiently clear.

After removing the appendix, Voelker sews together the middle and outer bands with a continuous suture for about 8 centimeters. By this means the anterior portion of the cecum is invaginated. If the greater part of the cecum is below, and if the bands are short, the cecum can be shortened by the suture. At the same time the space under the mouth of the ileum is lessened and there can result no accumulation of contents. Likewise a partial fixation is obtained, as the anterior portion of the movable cecum is contracted. On the plaited portion is reflected the posterior surface. This plaiting is indicated only in large dilatations. In twelve cases satisfactory results have been obtained. Especially in one case after the plaiting a previous long-existing temperature disappeared. The case is a good example, as the appendix had been removed previously, and the plaiting only was done. Stenosis of the cecum or ileum can be avoided with care.

Dr. Stierlin reported the after-results of three cases of shunting of the cecum and ascending colon for severe obstipation of the ascending type. Two of these cases were operated by Professor Wilms and the third by Professor de Quervain. In the three cases, before the operation, the bismuth shadow persisted for twenty-four to

forty-eight hours in the cecum and ascending colon and lower down in the intestine in the form of fecal masses. After operation no shadow was visible after twenty-four hours.

Disregarding the *x*-ray pictures, the clinical results are satisfactory. In all the cases the obstipation has disappeared, the patients having daily movements. In the case operated upon by de Quervain, plication of the shunted colon was done, making it very narrow at the hepatic flexure to allow for drainage of its secretion, yet permitting no return flow of the feces.

The indication for shunting as well as the improvement after operation was shown by the *x*-ray pictures.—*Annals of Surgery*, January, 1912.

CONGENITAL PYLORIC OBSTRUCTION.

LOWENBURG (*New York Medical Journal*, Jan. 20, 1912), after a discussion of the symptomatology and diagnosis of congenital pyloric obstruction, advises as conservative treatment lavage twice daily, with a warm solution of sodium bicarbonate, one drachm to the pint of water, and most careful dietetic supervision. If milk formulæ increase the vomiting resource should be had to cereal waters, alone or combined with animal broths or with condensed milk, etc. Whey, plain or combined with a little wine or cereal water or meat juices, may be of assistance. Kellar's malt soup and peptonized milk are also good. In fact, any food or food combination that appears to be non-irritating and sustaining may and should be employed. Food should be given in the smallest possible quantities, from a half to one drachm every hour or so. It is better that an ounce or two given over twenty-four hours should be retained than eight or ten ounces should all be vomited. As conditions indicate, the quantities may be cautiously increased. In some cases, associated with much fermentation, vomiting is lessened by using a liberal amount of lime-water with the food, from ten to thirty per cent. We should also not forget the use of sodium citrate with all milk feedings. In some instances it does good to suspend mouth feeding altogether, substituting rectal enemas of pancreatized milk, merely continuing the lavage, and the administration of from ten to fifteen minims of Chapoteaut's solution of strontium bromide. In some cases an occasional meal per rectum in association with mouth feeding is of great assistance. In conclusion it may be said that as perfect hygienic surroundings as it is possible to secure and the advantages of skilled nursing should be given to all these cases.

In deciding as to surgical intervention three factors are concerned, namely, the weight, the strength, and the character of the constipation. Vomiting has very little bearing on this point, for in many cases that end in recovery it continues with more or less emphasis for some time after. In order to give the matter some definite shape Lowenburg offers this rule as a guide in deciding upon surgical interference in this type of cases: If a small amount of food is retained and if the weight remains stationary, or if there is a slight weekly gain, or the strength does not appear to be fast ebbing away, and if together with this we have an occasional fairly large bowel movement, we are justified in waiting, even in spite of the continuation of vomiting. If, however, no food at all is retained, and if there be a progressive and continuous loss of weight and strength with increasing constipation—indicating more or less spasm—these cases, approaching the type of complete obstruction due to hypertrophy, should be operated on before the degree of asthenia becomes too great.

TREATMENT OF CARCINOMA OF THE RECTUM AND PELVIC COLON.

MILES (*Glasgow Medical Journal*, February, 1912) notes that he has never seen any benefit derived from either radium or the *x*-ray in the treatment of cancer, and that surgery is for the present our only hope. He calls attention to the divided opinion concerning the appropriate operation for rectal cancer, one set of surgeons

strenuously advocating the perineal methods of excision and the other leaning toward the combined abdominoperineal. He further observes that the study of the spread of cancer of the rectum, whether it be made in the post-mortem room, by the aid of the microscope, during the performance of primary or secondary operations, or at the bedside among patients who are suffering from inoperable cancer, is the only guide by which we may hope to fashion operative procedure in accordance with the dictates of pathology.

As to the degree of malignancy of cancer, the type of involvement is the adenocarcinoma, of which there are three distinct varieties which differ considerably in virulence. In one, a somewhat rare form, the papilliferous carcinoma, the neoplasm appears to expend its energy mainly in surface proliferation, tardily infiltrating the muscular coat of the bowel. Consequently, this kind of growth increases rapidly in size, soon blocks the lumen of the bowel, and gives rise to symptoms, chiefly those of obstruction, which lead to comparatively early detection.

A tumor of this kind may encompass the whole of the circumference of the bowel before marked permeation of the bowel wall has occurred. These growths, therefore, when freely removed, seldom give rise to recurrence, and are particularly hopeful cases so far as prognosis is concerned. Unfortunately, they are not often met with.

The second variety, the typical adenoid cancer, is not so rapid in its surface growth, breaks down early into an excavated ulcer, and very soon permeates the wall of the bowel, extending widely into surrounding tissues. In examples of this variety of neoplasm, by the time that one-half of the circumference of the bowel has been encompassed, permeation of the muscular coat has already taken place; when more than one-half of the circumference is involved extension of the disease into the perirectal tissues has occurred. These growths are very prone to recur after removal.

The third variety—the colloid cancer—is a degenerative phase of the preceding. The growth increases rapidly in size, breaks down early, leading to deeply excavated ulceration, and infiltrates widely. It always recurs after perineal methods of removal.

Cancer of the rectum, when observed in an early stage, is confined to the mucous membrane and submucous tissue. The growth is sessile and readily movable upon the subjacent muscular coat of the bowel. The mobility in this stage is such that, when situated within three inches of the anal margin, the growth may be readily hooked down by the examining finger and made to protrude through the anal orifice.

It is impossible to determine how long a growth, in the preulcerative stage, may have existed prior to detection, because there are no data available; but this much is certain, ulceration of the surface takes place early, and the growth becomes firmly fixed to the muscular coat of the bowel long before half of its circumference has been encompassed.

When permeation of the whole thickness of the wall of the bowel has occurred, further spread of the disease takes place in the perirectal tissues.

The spread of a cancerous tumor of the rectum, then, is both intramural and extramural. The intramural spread takes place chiefly in the submucous lymphatic plexus, though to some extent the muscular and serous coats of the bowels, especially when the growth is situated in the terminal portion of the pelvic colon, are also permeated. This spread is both visible and invisible to the naked eye.

The visible spread may be recognized as a pearly-white thickening of the bowel wall. Often it extends only a few millimeters beyond the obvious surface margin of the growth, so that when the bowel is divided at a distance of about an inch either above or below the margins of the growth, apparently healthy and uninfiltrated bowel wall is seen. Occasionally this pearly-white thickening is observed to extend throughout the length of the bowel for several inches.

The invisible spread is of far more con-

sequence than the foregoing, because it cannot be readily detected, and may therefore be thought not to exist. That it may exist in some instances throughout many inches of the length of the bowel wall, both above and below the primary growth, has been very clearly and unmistakably demonstrated by Mr. Sampson Handley, whose work with the mucicarmine method of detecting cancer cells which are undergoing mucoid degeneration is now so widely known. The demonstration of this invisible spread, however, cannot be made in all cases, probably owing to the fact that the cancer cells do not, in every case, undergo mucoid degeneration, but this does not necessarily disprove the existence of this kind of spread.

Clinically, the frequent experience of recurrence taking place in the proximal end of the gut after perineal excision supports Sampson Handley's view strongly.

The extramural spread, like the foregoing, is both visible and invisible. The visible spread, in an early stage of development, can only be recognized during the performance of primary or secondary operations. It cannot be made out in cases before operation, because it is not sufficiently developed to produce fixation of the bowel or diminution in the mobility of the growth. Easily recognizable extramural spread may exist without interfering in the smallest degree with the mobility of the growth. Visible extramural spread may exist either as a continuous spread from the point of permeation of the bowel wall, or as metastases situated at a considerable distance from the primary focus. The invisible spread is much more difficult to determine.

From clinical observation of recurrences after operation, these cancer cells invade, even in comparatively small and early growths, the lymphatic areas to a distance far beyond the limits of the visible spread, and, consequently, it is imperative that a complete and comprehensive removal of all the tissues comprising these lymphatic areas should be carried out in every case, no matter how limited the primary growth may be. The lymphatic areas are three in number, the zones of downward, lateral, and upward spread.

In the zone of downward spread the tissues contained in this lymph area are the perianal skin, the ischiorectal fat, and the external sphincter muscle. Anatomically there is a free intercommunication between the lymphatic plexuses of the wall of the rectum and those contained in the structures mentioned above; and, consequently, it is easy to understand how a cancer cell, detached from the main growth, may be carried by the lymph stream to some distance, its migration being arrested at any point of this extensive meshwork. It is also apparent that even an exhaustive microscopical examination of the tissues in this area might fail to detect such isolated cancer cells. The evidence of the preëxistence of this invisible spread must, therefore, be based upon the localities in which postoperative recurrent growths manifest themselves.

In eight of the author's cases in which perineal excision had been performed for primary growths situated at a distance, varying from half an inch to five inches above the anal margin, recurrence took place in the perianal skin.

In eleven cases of recurrence after perineal operations, performed by other surgeons, the perianal skin was involved. In five cases in which the operation performed was resection of the diseased segment, with end-to-end anastomosis, the perianal skin was involved by the recurrent growth. In all of these five cases the primary growth must have been situated at least three inches above the anal margin, and possibly at a higher level.

All of these cases point very strongly to the fact that the perianal skin is very highly vulnerable to downward invisible spread, even when the primary growth is situated in the upper part of the rectum or in the terminal portion of the pelvic colon.

The lymphatic area in the zone of lateral spread embraces the levatores ani muscles, the retrorectal lymph nodes, the lymph nodes in relation with the branches of the internal iliac artery, the prostate gland, the

base of the bladder, and, in the female, the posterior wall of the vagina, the cervix uteri, and the base of the broad ligament with Poirier's gland. Situated between the upper surface of the levatores ani and the rectovesical fascia there is an extensive lymphatic plexus which freely communicates with the intramural lymph plexus. Consequently, in growths located in the ampulla of the rectum, direct permeation is especially liable to take place there.

Enlargement of the retrorectal lymph nodes is nearly always met with in carcinomatous ulcers of the ampulla of the rectum. This is often of an inflammatory nature owing to septic absorption, but nevertheless secondary deposits in these nodes are frequently met with.

The capsule of the prostate gland is sometimes the seat of visible spread in cases of cancer situated on the anterior wall of the ampulla of the rectum.

It is advisable, therefore, in all cases of a growth situated in this position to dissect off the capsule of the prostate gland as a matter of routine. Implication of the base of the bladder and of the lymph nodes situated among the branches of the internal iliac vessels is only seen in the more advanced cases, and although it may be impossible to detect the presence of such deposits before an operation, when they are encountered an early and speedy recurrence of the disease may be anticipated. Involvement of the posterior surface of the vagina may also occur early in growths situated in the terminal portion of the pelvic colon.

It will be seen, therefore, that somewhat wide and extensive visible spread of the disease among the tissues constituting the zone of lateral spread may occur in early cases. Such secondary deposits, in a great many cases, cannot be detected beforehand, and might be missed altogether during the performance of an operation carried out solely from the perineum.

The zone of upward spread is much the most important of the three, from the point of view of the extramural spread of cancer of the rectum. The structures contained therein are the peritoneum of the floor of the pelvis; the pelvic mesocolon throughout its length; the paracolic lymph nodes; and the group of lymph nodes which are situated at the bifurcation of the left common iliac artery. In quite early instances of cancer of the ampulla of the rectum, and also of the terminal portion of the pelvic colon, invisible extramural spread occurs rapidly, and is distributed over a wide area. The tendency is for cancer of the rectum to spread upward in the pelvic peritoneum and the pelvic mesocolon, the lymphatic plexuses in which terminate in lymph vessels accompanying the inferior mesenteric vein as it lies in the parietal border of the pelvic mesocolon, on their way to the lymph nodes grouped at the bifurcation of the left common iliac artery. Consequently these tissues must be considered to be highly vulnerable to recurrence, and should in all cases be fully removed.

The presence of secondary deposit in either the pelvic peritoneum or in the pelvic mesocolon is evidence that the case is too far advanced for operation; and if the lymph nodes, situated at the bifurcation of the left common iliac artery, are the seat of metastases the case is quite hopeless, because invisible spread would have probably extended to a much higher level. Moreover, there is clinical evidence that peritoneal surfaces are especially prone to contact infection.

Miles believes that 95 per cent of cases are operable if the radical abdominoperineal operation is contemplated; but if perineal methods of excision are adopted, over 90 per cent will recur. He reports that of 58 patients who had recovered from perineal excisions performed by himself, 55 are known to have suffered from recurrence. This because of the fact that the tissues composing the zone of upward spread are beyond the reach of any operation carried out from the perineum.

The operation of resection of the diseased segment with end-to-end anastomosis, though ideal from a surgical technique point of view, and having perhaps its sphere of usefulness for teaching students manipulative skill when operating upon the cada-

ver, is a bad one, whether it be performed from the perineum for carcinoma of the terminal portion of the pelvic colon, or from the abdomen in cases of cancer situated at or about the middle of the sigmoid loop.

Of the seven operations he performed all recurred, even though the growths were in an exceptionally early stage of development. The abdominoanal operation is similarly condemned. Miles means by this term bringing down the colon and stitching it to the anal orifice. The objections to this method are that the greater part of the pelvic mesocolon must be left behind in order to maintain the blood-supply of the new rectum. If, however, the pelvic mesocolon is removed the pelvic colon will slough, and the operation would be worse than useless. Moreover, the levatores ani, the ischiorectal fat, the external sphincter muscle, and the perianal skin are all preserved in violation of the teachings of pathology in regard to their vulnerability to recurrence. A colostomy opening is necessary because it is essential that the pelvic mesocolon be completely removed, and therefore the whole of the pelvic colon must be removed also, with the exception of a small portion close to the descending colon which is utilized in the formation of the colostomy.

If the best results are to be obtained the operation must not be reserved for advanced cases only. It should be done for early cases; in fact, the earlier the better, because then we may hope to have circumvented the invisible spread of the disease. Should this operation, as has been suggested, be utilized only for advanced cases, the invisible spread will have, in most instances, advanced beyond the confines of the operative field, and recurrence will be an inevitable result.

As to his own statistics in this operation, Miles has performed it 42 times—in 22 men and in 20 women. Of these 42 cases, 17 died from the operation, giving an operation mortality of 40 per cent. Peritonitis, shock, and hypostatic congestion of the lungs accounted for more than half the deaths. Four were attributed to cardiac failure. In 25 patients who survived the operation, four have suffered from recurrence. Ten have been alive and without recurrence for two years and upward.

JOINT INFECTIONS.

Ogilvy (*New York Medical Journal,* Dec. 2, 1911) notes that joint infections must be distinctly differentiated and classed by themselves. To this he gives no consideration in his present paper. As to tuberculous infections, he observes that fully 90 per cent of the chronic inflammatory joints of children are tuberculous. The *x*-ray is often diagnostic, except when the disease primarily infects the synovia and is confined to it. As to treatment, the tuberculous joint should be repeatedly aspirated, thereafter opened, irrigated, and closed without drainage. Erasion is the next operation indicated, carbolic acid being applied to the foci of disease. Excision should be used only exceptionally in children. In adults it is the best operative procedure, especially in long protracted cases. Massage and passive motion should be begun as early as possible.

TECHNIQUE AND REMOTE RESULTS OF VASCULAR ANASTOMOSIS.

Carrel (*Surgery, Gynecology and Obstetrics,* March, 1912) states that to-day the method of vascular anastomosis can be considered as completely studied both from the standpoints of technique and experimental results. As to general rules, rigid asepsis is absolutely essential, hence suture should never be performed in infected wounds. It is probable that slight nonsuppurative infection which does not prevent the union of tissue primarily may be sufficient to cause thrombosis. Traumatism may also cause thrombosis. If a forceps be used, it must take between its jaws nothing but the external sheath. When temporary hemostasis is obtained by means of forceps or clamps, these forceps or clamps must be smooth-jawed and the pressure of the jaws carefully regulated.

The desiccation of the endothelium may also lead to the formation of a thrombus. During the operation the wall of the vessels must be humidified with Ringer's solution, or covered with vaselin. The presence of coagulated blood or fibrin ferment or of foreign tissues or tissue juices on the interior can determine the production of a thrombus. It is therefore necessary to resect or to remove the external sheath from the edges of the vessels; for if during the suture it gets between the edges of the vessels, or around the silk threads, it very quickly leads to a deposit of fibrin, and possibly to an obliterative thrombus. By washing carefully the vessel with Ringer's solution and coating it and the surrounding parts of the operating field with vaselin, we can efficiently protect the endothelium against coagulating blood and juices of tissues. Vaselin prevents, also, the fingers of the operators and the threads from being soiled by fibrin ferment.

As perforating stitches are always used, the endothelial layer is necessarily wounded by the needle. These wounds are rendered as harmless as possible by the use of very fine and sharp, round needles. Extremely small wounds are made. The threads are sterilized in vaselin and kept heavily coated with it during the suture. Vaselin is rubbed off in the holes, covers the silk threads, and prevents the wounded tissue and the foreign material from coming into actual contact with the blood.

Stenosis is very liable to occur at the point of anastomosis. Therefore the suture must be performed while the wall is under tension. The tension can be easily obtained by traction on retaining stitches properly located. Great care is taken to obtain a smooth union and approximation of the internal coats. When these general rules are observed, the operation can be safely performed.

The instruments employed are described and pictured, as is the method of hemostasis and suture.

As to the results, Carrel states that a great many anastomoses have been performed with this method. If the technique here described is followed, no complications occur. The results are practically always positive. Therefore it has permitted the solution, from a surgical standpoint, of important problems, such as transplantation of venous segments to arteries, homoplastic and heteroplastic transplantations of blood-vessels, transplantation of vessels in latent life, of devitalized vessels, of pieces of veins, peritoneum and rubber on arteries, replantation and transplantation of spleen, thyroid gland, kidneys, limbs, etc. Many animals were kept alive for a long time; therefore the anatomical and clinical results of the anastomoses are completely known.

Immediately after the operation the endothelial coats of the vessels appear as closely approximated and the stitches are seen in the lumen of the vessel. After eight days the appearance is slightly modified; the line of union is less apparent. The threads are uncovered by fibrin. The photograph of an arteriovenous anastomosis taken fifteen days after the operation shows the appearance of the scar when the stitches are very regularly disposed. In the arterial anastomosis the stitches disappear progressively and the scar becomes very small. Sometimes it is slightly depressed. No stenosis was ever observed. After six months the stitches have completely disappeared on an arterial suture, while on the venous anastomosis of a replanted kidney the threads could be seen ten months after the operation. On arteriovenous anastomosis, fifteen and twenty months after the operation, the location of the anastomosis can be determined on account of the difference of caliber; but it is perfectly smooth and there is no dilatation or stenosis at its level. After the extirpation and replantation of the spleen with circular suture of the splenic vessels, the caliber of the artery and of the vein remains entirely normal after twenty-two months. Several other animals have lived, or are still living, two years, two years and a half, three years, and four years after having undergone several kinds of vascular anastomosis. The results are uniformly excellent.

The study of the sections of the anastomoses shows that the union of the ends of the vessels is always very accurate, and can even take place without scar. But such a perfect result is exceptional. In no case was dilatation or stenosis at the level of the line of sutures observed. The technique, therefore, brings about an almost perfect reconstruction of the vessel. It explains the constancy of its clinical results.

The technique has been used for several years on human beings. Crile employed it at the beginning of his method of blood transfusion. Many other American and European surgeons performed anastomoses of large vessels. Even the aorta of a child was successfully anastomosed by Braun. The blood-vessel operations are easier on human beings than on dogs, and it seems that the results are as satisfactory.

It can be concluded that this simple method of anastomosing blood-vessels gives results that remain excellent after a long time, and that it can be used safely on human beings, provided the rules of the technique be strictly followed.

REVIEWS.

A Study of Malaria and Beriberi. By S. M. Varis, M.D., C.M. The Pioneer Press, Allahabad, 1912.

This volume, which was gotten out as a contribution on the part of its author to the general rejoicing at the time of the visit of the present English King and Queen to India, points out the almost universal prevalence of malaria in that part of the world and the great frequency of beriberi. As an "apology" for his contribution the author states that most of the books upon this subject are not within the reach of his countrymen, and that he has had extraordinary opportunities for studying these diseases in places where they are constantly present in malignant form. As he has recently been Plague Medical Officer, he is naturally particularly interested in all forms of tropical diseases. Altogether he devotes 20 chapters to the subject of malarial diseases, thereby covering 385 of the 448 pages in the volume. In Part II there are six chapters, with references and bibliography, on beriberi. The first portion of the volume deals with the history of malaria and with the use of cinchona bark in its control. Then follow chapters upon the geographical distribution of the disease, the parasitology from the etiological standpoint, a description of the malarial parasite in its various forms, and remarks upon the life cycle of the parasite and mosquito. Other chapters deal with the pathology of acute malarial diseases and malarial cachexia, with the variations in the course of the disease and with its complications and sequelæ. The closing chapters in the part dealing with malaria adequately discuss the subject of treatment. One great advantage of the book is that it is written by an author who has seen much of the disease. Although we like to be optimistic as to the beneficial effects of treatment, we believe that in many instances he thinks remedies can accomplish the impossible, and, like many East Indian writers, he has no hesitation in mentioning proprietary preparations which are no better than those which are official in the British and United States Pharmacopœias. The application of liquor epispasticus over an enlarged spleen due to chronic malarial infection is, we think, open to criticism, the more so as the author himself points out that a permanent change consists in a form of fibrosis.

A fairly exhaustive consideration of the various views as to the etiology of beriberi is presented. It is interesting to note in this connection that for the cardiac failure which occurs in some cases of beriberi the author seems inclined to indorse the use of adrenalin.

THE HOME-NURSE'S HANDBOOK OF PRACTICAL NURSING. By Charlotte A. Aikens. Illustrated. The W. B. Saunders Co., Philadelphia, 1912. Price $1.50.

Whatever we may think of the value of books prepared especially for nurses who are undergoing a course of instruction as pupils in a large hospital with a properly maintained nurses' training school, we cannot extend approval to books which are designed for home-nursing classes in Young Women's Christian Associations, in schools for girls, and as a working textbook for mothers and trained attendants. If it be true that no physician is well trained until he has obtained hospital experience in addition to his undergraduate studies, it is even more true that no nurse is well trained until she has been subjected to the discipline of a hospital and until she has been taught not only by precept but by observation and training exactly how to use her hands as well as her brains in caring for the sick. In other words, any book which is designed to help the nurse along a short and imperfect road is scarcely to be commended in its object, even if the text is of such a nature as to be beyond criticism. Some of the illustrations in the form of plates are entirely unnecessary, as, for example, those which show a tray containing a breakfast, a luncheon, and a supper. While it may be important for the nurse to study the patient's convenience, it is hardly worth while to introduce a plate in which the legend informs us that if the teapot on the depicted tray had been put in the upper right-hand corner instead of the upper left-hand corner, the patient's convenience would have been promoted. Equally unnecessary is the plate showing a bowl of soup, six pieces of cake, three pieces of celery and some olives, and prunes or walnuts (one can't tell which) on a fourth dish, or still another plate labeled "For a Patient on a Light Diet," which is so indefinite that none of the viands can be distinguished, and one of them may be the cross-section of a Dutch cheese, of a grapefruit, or of a cantaloupe. Toward the close of the book, amongst a number of excellent recipes, we find a plate with a dish of nuts and another of devilled eggs, but no one can tell of what kind the nuts are, and there is nothing to show that the eggs have been "devilled" except that they seem to be resting in some leaves. This interesting plate is followed by one entitled "Calf's-foot Jelly and Other Things." These, however, are the worst features of the book. The best features are probably the series of questions which close each chapter, whereby the main points are emphasized and the nurse can give herself a quiz.

THE INFLUENCE OF CAFFEINE ON MENTAL AND MOTOR EFFICIENCY. By H. L. Hollingworth, Ph.D. The Science Press, New York.

This volume is a reprint from the *Archives of Psychology* for April, 1912, and is a contribution from the Columbia University in Philosophy and Psychology. As there are no less than 166 pages in the volume it can easily be understood that the matter is considered exhaustively, and careful descriptions are given of all the experiments which were carried out by Dr. Hollingworth in a most exhaustive research. The results of these experiments have already been reported by him in a comparatively brief summarization of his work which he published in the THERAPEUTIC GAZETTE during the latter part of January, 1912. It will be recalled that Dr. Hollingworth has practically proved beyond all question that caffeine increases the ability to work within certain limits, if adequate food and rest is provided, without in any way drawing upon the reserve energies of the body, this increased ability being due to an increased ease of work whereby the functions are performed more readily.

There are no less than fifteen chapters detailing the results and methods employed. In the earlier ones a careful description is given of the technique which he used, and then come chapters upon the various tests employed when the patient took caffeine or was free from its influence. Up to the present time there has been no research upon the influence of caffeine upon mental

and muscular effort so thorough and complete as this one, which must remain for many years, if not forever, as a classic contribution to a subject which is interesting to the entire human race. Although the experiments covered forty days the author is frank enough to admit that they cannot be considered as equivalent to the results which might ensue from the continuous use of caffeine over a period of months and years; but he also points out that many of the disagreeable effects which ensue when coffee and tea are employed are in reality due to non-caffeine ingredients and not to the caffeine itself. As he well says, the most interesting result of his investigation is the proof that there is a complete absence of any trace of secondary depression of any sort or of secondary reaction after the stimulation undoubtedly induced.

INFANT FEEDING. By Clifford G. Gruele, A.M., M.D. The W. B. Saunders Co., Philadelphia, 1912. Price $3.00.

So many books upon this subject are now presented for the patronage of the profession and the laity, and so many are excellent, that it is difficult to make a choice for oneself or for one's patients. This volume, including its index, covers about 300 pages, and therefore there is space for a fairly exhaustive consideration of the subject in hand. Opening chapters deal with the processes of nutrition and the digestive tract, then with the breast-feeding of infants, and this is followed by eight chapters upon artificial feeding. The fourth part of the book deals with special diets in various disorders and diseases of infancy. In this part an unusual classification is made in that there is a chapter devoted to the so-called "exudative diathesis," which is described as a congenital anomaly of the organism which usually affects all members of a family and is characterized by a distinct predisposition to eczematous conditions of the skin and infection of the respiratory tract. So, too, there is another chapter upon the "spasmophilic diathesis," which is described as a condition characterized by increased irritability and a tendency to a spasm-like contraction of one or more groups of muscles. It is encouraging to know that when a child falls into one of these spasms one should never despair until the heart sounds can no longer be heard. The book contains a large amount of valuable information. It is worthy of being added to the library of those who are particularly interested in this branch of medicine, but it will not in our opinion supplant other books upon this subject which are now popular.

A TEXT-BOOK OF ALKALOIDAL THERAPEUTICS. By William F. Waugh, M.D., and W. C. Abbott, M.D. Third Edition, Revised and Enlarged. The Abbott Press, Chicago, 1911.

As is evident from its title, the authors of this book have prepared it with the object of advancing the popularity of active principles of drugs rather than the so-called galenical preparations. They not only advance their own views, but they quote copiously from the opinions of others who are recognized as possessing more or less authority in the field of therapeutics. The text distinctly combats the very prevalent nihilism which is found amongst certain practitioners to-day, and one cannot help feeling that the great optimism, as to the effects which it is possible to produce by drugs, will not in the end, when the practitioner meets with unavoidable disappointment, make him doubtful rather than enthusiastic. The authorities do not limit themselves to the consideration of vegetable substances which possess active principles, but discuss as well drugs which are obtained in the mineral kingdom. A condensed therapeutic index precedes the list of authors quoted and affords at the same time an index to the contents of the volume in general.

MEDICAL POCKET FORMULARY. By E. Quin Thornton, M.D. Lea & Febiger, Philadelphia, 1912. Tenth Edition Revised. Price $1.50.

The crowded course of the medical curriculum makes it almost impossible for the medical student to have sufficient training in prescription writing and the combination

of drugs before he graduates. This is much to be regretted, and results in the employment of ready-made formulas to an extent which is perhaps undesirable. On the other hand, there can be no doubt that a number of drugs brought together in a proper manner often possess a power for good which they would not have individually, and perhaps more than the total of their single efforts would amount to if they were not added together. In other words, the combination materially increases the efficiency of each ingredient. Furthermore, it is essential in many instances that the medicine shall be put in an attractive form. That Dr. Thornton has succeeded in producing a very efficient and complete formulary is proved by the fact that ten editions have appeared in a comparatively few years.

A Compound of Human Physiology for the Use of Medical Students. By Albert P. Brubaker, A.M., M.D. Thirteenth Edition, Illustrated. P. Blakiston's Son & Co., Philadelphia, 1912. Price $1.25.

For more than thirty years Dr. Brubaker's little book has been familiar to the medical students of this country, being one of the first so-called quiz-compends which appeared. Actively engaged in teaching this department of medicine to undergraduates, and being constantly at work in revising the editions of a larger book, he is kept thoroughly abreast of physiological advances, and in the brief space of about 250 pages covers this large field surprisingly well. It goes without saying that it is quite impossible for any student to use this book as his sole source of physiological learning, but as a means of brushing up for his quizzes in examination it can be commended because of its concise character and accuracy.

When a Boy Becomes a Man. A Little Book for Boys. By H. Bisseker, M.A., with a Foreword by Edward Bok. The Fleming H. Revell Co., New York, 1912. Price 25 cents.

This little book belongs to a series which has been given the name of the "Edward Bok Books," not because Edward Bok has written them, but because he seems to be responsible for their appearance in this form. The other books of the series consist in little volumes, one of which is intended for parents, entitled "How Shall I Tell My Child?" and in another for young men written by Dr. Hall entitled "Instead of Wild Oats." In the brief space of forty pages, five chapters deal with "what goes on inside of you," "how a boy can injure his future," "the greatest danger of all," "where Nature takes its course to the boy who has yielded." The best advice in the book is that a boy should always remember that his father is his best confidant.

How Shall I Tell My Child? By Mrs. Woodallen Chapman, with a Foreword by Edward Bok. The Fleming H. Revell Co., New York, 1912. Price 25 cents.

We have just referred to this little book in the paragraph above. It seems to us to be the better of the two. The first chapter asks and attempts to answer the question, "What Should I Tell My Child?" The second, "At What Age Shall I Tell My Child?" The third, "How to Tell a Child;" the fourth, "When a Child has Already Heard;" fifth, "When a Wrong Habit has been Formed;" and the sixth, "At the Adolescent Period." This book deals as much with a mother's attitude to her son as with her attitude to the daughter.

Instead of Wild Oats. By Winfield Scott Hall, with a Foreword by Edward Bok. The Fleming H. Revell Co., New York, 1912. Price 25 cents.

In this one of the series to which we have already referred Dr. Hall deals with matters in a plainer fashion than the authors of the other two volumes. This is obviously necessary in view of the fact that it is written not for the parent but for the use of the boy who has practically reached manhood. The advice which is given in it is good, and the dangers of wild oats are clearly pointed out. That these three volumes are capable of materially arresting the great wrong of the ages is, of course, not to be thought of, but they are sane and simple presentations of facts which will help in the cause.

A Compendium of Diseases of the Skin. With a Therapeutic Formulary. By L. Duncan Bulkley, M.D. Fifth Revised Edition. Paul B. Hoeber, New York, 1912. Price $2.00.

Dr. Bulkley is known as a prolific writer and constant lecturer upon diseases of the skin. We do not see that this volume possesses any advantages which cannot be found in other equally condensed or more complete treatises on dermatology. There are no illustrations, but toward the close of the book there is a formulary giving the composition for medicated baths and the various forms of local applications and internal medicines which are commonly used by dermatologists.

Surgery of Deformities of the Face, Including Cleft Palate. By John B. Roberts, A.M., M.D. Illustrated. William Wood & Company, New York, 1912.

This excellent brochure of 259 pages is designed to be helpful to the clinical surgeon, into whose hands inevitably fall a certain number of deformities of the face and the head. After preliminary chapters devoted to the Development of Plastic Surgery, a Survey of the Anatomy of the Face, the Characteristics of Surgery of the Face, the Principles of Plastic Surgery of the Face, Gunpowder and Local Discolorations and Tattooing, are taken up Fistulas, Fissures, Encephalocele, Atrophy and Hypertrophy; Disfiguring Skin Diseases Requiring Surgical Treatment; Deformities of the Mouth and Lips, Harelip and Other Facial Clefts; Cleft Palate, this section being covered briefly but with unusual clarity considering the space occupied. Then follow chapters on Cheiloplastic Operations not Connected with Harelip and Cleft Palate; Deformities of the External Ear; Deformities of the Nose; Rhinoplasty and Deformities of the Eyelids and Eyeball.

A Manual of Surgical Treatment. By Sir W. Watson Cheyne, Bart., C.B., D.Sc., LL.D., F.R.C.S., F.R.S., and F. F. Burghard, M.S. (Lond.), F.R.C.S. New Edition, Revised. Assisted by T. P. Legg, M.S., F.R.C.S., and Arthur Edmunds, M.S. (Lond.), F.R.C.S. In Five Volumes. Volume II. Lea & Febiger, Philadelphia and New York, 1912.

This second volume deals with the Surgical Affections of the Skin and Subcutaneous Tissues, the Nails, the Lymphatic Vessels, the Glands, the Bursæ, the Muscles, the Tendon Sheaths, the Nerves, the Blood-vessels, and the Bones and Amputations. It represents thorough revision and much rewriting of the original edition, incident to the many changes which have occurred in the field of surgical treatment. There is evidence throughout of careful study of modern literature and a wise selection of methods which have stood the test of clinical experience. The illustrations are numerous and adequate. The book is one to which the hospital surgeon can turn with full confidence of help.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The passage of the Workmen's Compensation Act some years ago gave rise to a large number of cases of medicolegal interest in the courts of law. These actions were mostly claims for compensation for injuries received in the course of employment. But a case recently decided in the courts has opened up entirely fresh ground. A young clerk claimed damages for alleged negligence on the part of his late employers, stating that owing to the insanitary condition of the office in which he worked for five years he contracted phthisis and had become an incurable consumptive. Dr. Leonard Hill, the physiologist, was called in to make an inspection of the premises in question, and his report was favorable, as there was no undue heat or moisture in the air and there were over 160 cubic feet of space to each person. Various clerks gave evidence as to their repeated illnesses during the time they were employed in the office, though one

witness testified that he had spent twenty-three years in the said office without a single serious illness. After the jury had been to view the premises in question they gave it as their opinion that the conditions in the office were injurious to the health of the persons employed in it, including the plaintiff, but that the defendants were not cognizant of these facts. Judgment was accordingly entered for the defendants, but it is more than probable that a test case on the same lines will be taken before the House of Lords for final decision.

The proper feeding of children at school has just been discussed at a conference of the National Food Reform Association, and representatives from some of our best-known public schools gave their opinions on this important subject. The head master of Rugby made one statement that we feel sure will appeal strongly to the schoolboys under his care. He said that "while adults should rise from table hungry, children should reach a sense of repletion before rising." This delicately worded statement by a schoolmaster rouses in us a longing to be back again in our school days under the care of such a master; but alas, things were different in our day! Other speakers made attacks on the delights of the tuck-shop, but there is no doubt that even in high-class schools the monotony of the fare provided leads boys to spend their pocket money on unhealthy delicacies. One suggestion was made which will, we hope, receive wide attention, viz., the importance of so arranging the meals that the mouth will be in a hygienic state on finishing the meal, and examples of cleansing foods suitable for the end of a meal were given.

The cinematograph is evidently destined to become an educational force in this country, especially in the study of hygiene. The Incorporated Institute of Hygiene has inaugurated a series of "living-picture" demonstrations as an aid to sanitary science. The president pointed out how much useful work could be done in illustrating matters connected with preventive medicine, and common dangers to health such as the fly pest, stagnant water, etc. A very striking and startling picture was shown illustrating the dangers of infection carried by the common house-fly. First the flies were shown actually laying their eggs in a piece of putrid meat. Then all the stages in the development of the maggot were shown until the full-grown insect emerged. The full-grown flies were seen one moment sucking up the putrid exudations from a foul dead fish, the next moment settling on a basin of sugar on the tea table. To illustrate the methods by which tuberculosis may be transmitted from the aged to the young, a most disturbing picture was given showing the flies crawling in a well-used spittoon and apparently obtaining great satisfaction from its contents. Then the picture changed and the flies were seen walking over and licking the teat of a baby's feeding bottle. Perhaps the most gruesome picture was the final one, which showed the infant himself, chubby and healthy looking, but drawing into his system with every pull hundreds of microbes responsible for the most terrible of diseases. The demonstrations were so striking that at the end one could only wonder that any of us had survived the numerous dangers of our childhood and lived to tell the tale.

In the controversy which is still raging around the National Insurance Bill the profession have just scored a distinct victory. A motion was proposed in the House of Commons by a Unionist member which practically amounted to a vote of censure on the government for not having secured the coöperation of the medical profession in the working of the Insurance Act, as without such coöperation the act must fail efficiently to provide medical benefit. As the government men had not turned up in full force, ministers were faced with the possibility of a defeat in the division lobby, and rather than put the matter to the test they were obliged to accept the motion as it stood. Since then a formal notice has been issued to the medical profession by the

Insurance Commissioners inviting any information as to the conditions of practice that might be of service in drawing up the regulations for the administration of medical benefit. Although the lateness of the invitation has received considerable criticism, it has been well received and there will be no lack of response both from private practitioners and medical bodies. The British Medical Association will probably take the opportunity of placing before the Commission the information it has collected about the conditions of contract practice in the country, upon which information the demands of the doctors have been based. Whether this invitation for further information is an indication that the Chancellor intends to accede to the demands of the profession is at present a subject for keen discussion, but meanwhile the collection of pledges to give up all contracts for club practice, if necessary, goes steadily on.

A select committee has been appointed by the Home Secretary to investigate the question of the sale of patent medicines and their advertisement. The appointment of this committee is the result of an agitation which has long been carried on against the sale of proprietary medicines and foods, and many questions have been raised in Parliament on the subject. It has been urged that the composition of every advertised remedy should be plainly indicated on the label of every bottle or packet as a protection for the public. On the other hand, the proprietors of patent medicines contend that this protection would be worthless and that the home manufacture of proprietary articles from formulæ might result in worse evils, besides opening up a vast field for the substitution of "just as good" articles. Besides this the disclosure of its formula renders the trade-mark rights of any article practically worthless, and it is claimed that there has not been a single instance where a manufacturer has disclosed his formula that he has been able to retain his proprietary rights in his article. Proprietary articles when made by reputable firms have of late come so markedly into general favor on account of their handiness and uniform quality that legislation on the subject should only be passed after the most careful consideration of the matter from every aspect.

We regret to have to record the death of Sir Frederick Wallis, which occurred at the early age of fifty-three. Perhaps the work by which he will be best known is the part he took in the promotion of the Union Jack Club, which was founded as a national memorial to the soldiers, sailors, and marines who died in the South African war.

PARIS LETTER.

BY M. A. C. TUCKER, M.D.

With a view of safeguarding the professional interests of the corporation the "Syndicat Général des Oculistes Français" have taken energetic steps and have loudly protested before the administrative authorities against a well-to-do gentleman who is reproached with having obtained *gratis pro Deo* the performance of a cataractal operation within a ward of one of the Paris hospitals.

In the course of the first half year of 1911 the gentleman in question, said to be in an easy position of life, had himself admitted into the ophthalmological service of the hospital. Thus not only did he deprive the medical corps of the legitimate fees, but at the same time he unduly possessed himself of the room, bed, and assistance of a necessitous patient.

The fact having been brought to the knowledge of the aforesaid syndicate, the latter lost no time in addressing a strong protest to the charitable institution, and after a careful inquiry, in the course of which the prosperous station of the delinquent was fully established and demonstrated, the trustees of the hospital were empowered by the Home Secretary of the Republic to sue administratively the unscrupulous person for one thousand francs damages. In order to avoid the prosecution he was threatened with, the incrimi-

nated party submitted quietly and paid the amount claimed. Moreover, recognizing the wrong done to the profession, the hospital authorities were ordered to pay over half of the sum to the General Syndicate of French Oculists. This is important, inasmuch as it creates a most interesting precedent which should, in my opinion, be followed everywhere, for it concerns the most vital interests of the medical profession.

Of all questions of actuality the reform of the "Codex Medicamentarius Gallicus" is attracting and retaining general attention here. The last edition of the Code was published four years ago, the previous issue dating from 1881, a supplement to which appeared in 1905. The edition of 1908 was the work of a special commission instituted in 1897 by the Minister of Public Instruction, and after a laborious incubation of eleven years the said commission gave birth to a very imperfect creature which was far from answering general hopes and expectations, in spite of all the attention and anxious cares of its initiators. But if the new-born child presented great qualities and fine appearance it concealed also numerous deformities.

By a decree, dated April 16, 1910, of the Secretary of State for Public Education, a special and permanent commission was formed in order to prepare the future elements of a French pharmacopœia, and it sounds somewhat paradoxical to hear that out of the twenty-three members of such commission only three doctors in medicine are permitted to take part in its work. Moreover, these three medical lights are Professors Landouzy, Chassevant, and Mosny, assuredly most eminent men and distinguished members of the University and of the Academy of Medicine, but too much absorbed by their multifarious duties to be constantly posted on the daily innovations both in pharmacology and therapeutics. At all events, the adjunction to them of a few practical men ordering and applying remedies all around and every day would certainly and greatly help the deep theoretical science of the former with their material experience and skill.

By a recent decision published in the *Journal Officiel* the post of chief of the practical anatomical studies has been reestablished at the Paris Faculty. Curiously enough, this event coincides with a vote of the town council of Sceaux, a pretty little town near Paris, demanding that "patients dying in hospitals should have a right to have a grave, and that their bodies should not be disposed of without their express ante-mortem authority."

It must be mentioned that in such cases, when the bodies are not claimed by relatives, they are generally sent to the dissecting amphitheatre of the nearest surgical or medical university for dissection by students. There is no doubt that with our present notions of the respect due to the dead such a final fate seems rather shocking to many a delicate mind. But I am afraid that there is no remedy for the evil, if evil it be, and that such pious manifestations are fatally bound to remain purely platonic. Dissection of a corpse may be in itself a regrettable act, but nobody at the present time could seriously dispute its imperative necessity for the advancement of science. Without dissection, no anatomy; and without anatomy, no possibility of medical or surgical studies. Prohibiting dissection would bring us back to ancient times, when the opening of any human body was vigorously forbidden, and when anatomists were reduced to work upon animal carcases, as was the case of the celebrated Galen, who dissected apes seemingly with the idea that their structure approached that of the human species.

In April, 1572, the Paris Faculty of Medicine obtained from parliament "That no one will be allowed to anatomise unless the operation is performed under the supervision of a doctor in medicine, and that no corpse will be delivered to anyone, either by the criminal judge, by the executioner, or by the masters of hospitals, without the signed authority under seal of the dean of the Paris Faculty of Medicine."

In 1633 a surgeon was fined sixty pounds for infringing the order, and fifty years later the surgeon of the royal Duke of Orleans, having been convicted of unlawfully buying several corpses from a gravedigger's son and operating upon them, was banished for life and to have all his properties confiscated, whilst his accomplice, besides being ordered to pay a fine of thirty pounds, was condemned to be publicly flogged at the customary places and thoroughfares.

NOTES AND QUERIES.

PROGNOSIS.

Prognosis is so closely connected with treatment that a journal devoted to therapeutics may well quote an interesting article in the *British Medical Journal* of February 10, 1912, by Gardner. He reminds us that the diagnosis of disease, its treatment, its pathology, its etiology, are each and all matters of more or less difficulty. The prognosis of disease is beset with pitfalls; these pitfalls are many and frequent, not merely for the tyro in medicine but even for the most experienced. Prognosis means "knowing before," and though here and there no one better than a medical man can "know before" what is likely to ensue in a given case, how often it happens that the event turns out somewhat differently from what even the most experienced among us has been led to expect!

Gardner has been led to this subject as the basis for a few remarks owing to the number of cases he has encountered in which patients have told him that many years ago they were told they had some fearsome or fearful disease; that Dr. So-and-so said they had only days or a few weeks or a few months, as the case might be, to live, and that, to their astonishment, not only have they lived, but the fearful and fearsome disease from which they were supposed to be suffering and which was to prove so fatal has entirely disappeared, according to later authorities consulted; and here and there it has so happened—and Gardner confesses to a certain feeling of exhilaration whenever this fact is superadded—the condemning medical man has died first. He asserts he feels he ought to suppress this exhilaration, but has to confess that in almost every case in which this sad fact has been recorded by the condemned patient, he has so far failed. Not that he has not made mistakes himself, he states, as the sequel shows. But when he considers the number of lives he has met with, broken-down nervously, apprehensive neurotics; coddled bronchitics; gluttonous dyspeptics; females with "heart disease" suffering from flatulence; patients with pseudoangina in Bath chairs; cross-grained and irritable old ladies taking opium pills, and making every one about them miserable by fads and fancies and vapors—then he asks himself who is responsible for so much of this misery and distress, and he too often finds it is a member of his own profession, who, in some unguarded moment, started a pebble of innocent prognosis which, rolling on during the years, has become a regular avalanche of chronic invalidism and avoidable self-torture. Beware the unguarded word! Beware the unguarded hesitation! Beware even the unconscious sigh! An eminent consultant once told Gardner that a patient made to him this interesting confession. It was fortunately after many years of successful attendance, when the lung mischief for which he was called in had quite healed, and the patient knew her doctor well enough to talk to him in this wise: "Early in my illness, when you used to auscult my lungs, you had, perhaps, what was only a trick or habit of listening to my breathing, and then giving a little sigh. Every time you did this I said to my-

self, 'Another bit of my lungs gone.'" Gardner adds, but says he need hardly do so, that his medical friend was quite unconscious of his sighing propensities.

But this brings him to the point he wishes particularly to emphasize—that we medical men hold here an enormous power potent for good or ill to our patients. Sometimes it means all. Is it serious? Is it dangerous? Is it malignant? Is it a growth? Is it heart disease? Is it this? Is it that? Let no one of us think it is a matter of indifference how we answer. Of course we must give an honest opinion, but how that honest opinion is given matters a very great deal.

It is not the intention of Gardner to debate the old question as to how far we are to communicate dire and dread facts to our patients; whether in all cases we are to tell the brutal truth brutally or politely. Whether the patient with heart disease is to be shielded from knowing the truth, the whole truth, and nothing but the truth. Whether the inoperable malignant growth is to be unmasked in all its hateful aspect to the trembling patient hanging on our lips for the fateful decision. These questions have been debated before and generally receive the tactful and courteous consideration which still endures among us, and which distinguishes our profession even above all others, not excepting the clerical.

He wants rather to emphasize this part of his subject, that in doubtful cases, where we cannot be quite sure, where our "knowing before" must, if we are honest to ourselves, be a very uncertain knowledge, let us hesitate before we speak in didactic phrase to either the patient or anxious friends, of how long the sufferer has to live, and how short the time before the "abhorred shears" will snap the life-thread of those dependent upon us for an opinion as to prognosis in an admittedly problematical situation.

We may be wrong in our deductions. Gardner recalls two cases from his own experience to show this. Twenty-seven years ago he was asked to see, for an absent colleague, a bad case of hemoptysis, fibroid lungs, extensive excavation, emaciation, fever, and the usual accompaniments of fairly advanced pulmonary disease; frequent and severe attacks of hemorrhage followed. Prognosis! Well, most of us would have failed to guess what has happened. That patient, thanks to indomitable pluck both on his own part and that of a devoted wife, is still the honored head of one of the principal firms in Bournemouth, going to his office daily, and getting through an amount of work which puts to shame many a younger and a stronger man. How easy to have taken a pessimistic view of such a case twenty-seven years ago, to measure out his days, and to quote a very long figure in sporting odds against the chances of such a one. Had he been told he had no chance of recovery, had he had explained to him the pathology of his case, had he been other than he is in temperament, pluck, and that "quietness and confidence" which go so far to help such a sufferer, he would hardly be alive to-day. Gardner believes the deduction from the usual experience of such cases would have buried him years ago.

Yet another case. Four years ago a severe case of rheumatoid arthritis in an old lady of nearly eighty years came under Gardner's care. The severe pain which she suffered on the slightest movement was excruciating, and this pain persisted in spite of sedatives, spas, and external applications, giving rise to the suspicion that such acute agony could only be due to ulceration inside the hip-joint, to which most of the pain was referred. Heart complications set in three years ago at eighty years of age. The myocardium became very degenerated; anasarca and ascites, and at last a general edema, reaching even to the face, seemed to usher in the final scene. Prognosis, three years ago—a week or a month would seem to be the proper period to give to such a case. Yet that patient is still living, still dropsical, still with heart attacks of such a nature that she becomes cyanotic

for hours, but the pain of the rheumatoid condition has long since departed, and yet blistering her spine has not been the treatment employed.

Such cases, he thinks, should teach us to be more chary of prophesying when we do not know. Probably every medical man could give instances from his experience of such cases. The lesson to be learned is obvious. Even from the lowest motive—a desire to show our knowledge—it is wise to hesitate before limiting the period of existence possible in even some of the worst cases with which we may be confronted. Nor does the individual who attempts to be in a measure cheerful escape from pitfalls of his own making, as the following instance shows:

An eminent practitioner of this town was attending an old woman, aged eighty. To cheer her up, and impart some of that optimistic spirit for which, as well as other virtues, he is rightly famous, he told her he could see no reason why she should not live to be ninety. Contrary to his expectations and to those of her friends, a more settled gloom and melancholy possessed her, even after this would-be cheering intelligence. The secret came out later when, asked if she was not glad her doctor said she might live to be ninety, she pathetically answered, "No, he limited me!" So here is another possible rock of offence—do not limit your prognosis to a term of years, or some misunderstanding may arise even then.

But there is still another aspect of this subject to which Gardner draws attention—the therapeutic effect of a hopeful prognosis. He speaks from a personal experience both on his own *corpus vile*, as he terms it, and the results on others. If it is at all possible, be optimistic. One little knows the suggestive value of a hopeful prognosis. In the course of a fairly long experience Gardner asserts he could quote case after case in which a hopeful prognosis has done more than all the drugs, vaccines, serums, inhalations, *et hoc genus omne* in curing a patient. Hope is that potent elixir of life, as opposed to hopelessness, that dreary quenching of the spark of life. Never mind the failures; we have all to fail one day. Death, against whom we wage an incessant war, and whom we so often drive away from the field baffled and defeated for a time, has yet this revenge: some day he will return to conquer. Yet, while we honestly can, let us add to our therapeutic armory the suggestion of hope. If we cannot give hope of cure, let us give hope of relief; if we cannot give relief, let us give hope of partial relief; if we cannot give hope of partial relief, let us have some philosophy to offer to our wounded and sorely stricken patients, that even then we may administer some medicine to the mind.

Gardner then refers to a letter written to the *British Medical Journal* some years ago reflecting somewhat scathingly on the optimism of a well-known London consultant whose name at that time was in almost every one's mouth, professional and layman alike. A patient who complained of pain in the chest and had consulted many men, but could get no relief, at last consulted this famous consultant, and was told nothing could be found, not even with *x*-rays. He was sent away with a cheerful prognosis. Soon after *x*-rays revealed a mediastinal tumor, from which ultimately the patient died. How wrong, in the opinion of the writer of the letter, was the prognosis of the optimistic consultant! With this Gardner differs. For the one case that was cheered up wrongfully, he, from his own knowledge, could quote a dozen—and he has no doubt the list could be swollen to a hundred even by others—which this cheery consultant has blessed by his optimism and put on the road to recovery by a hopeful prognosis, and personally he would rather have the opprobrium of one case where in good faith he had given too hopeful a prognosis than bear the guilty knowledge of having condemned an innocent sufferer to added pains more hard to bear, more difficult to sustain, because mental as well as physical, by a dreary

prognosis, proved wrong by the after-history of the case, and given on an assumed knowledge which by the light of experience may be falsified again and again.

He believes the younger members of the profession are the principal offenders in this respect. They come fresh from hospital with all the latest learning at their finger-tips; they have seen so much that we poor provincial country "joskins" cannot (as they think) have seen, and are so up to date and familiar with the grave cases and serious puzzles of the London hospitals, that there is no wonder they are somewhat biased in favor of the greater surgery. When, then, a child has overeaten at a party and has a flushed face, is slightly delirious, has a high temperature, is constipated, sick, and presents a doubtful tache cérébrale, it is not always necessary to get in a couple of nurses, apply Leiter's tubes to the head, make a lumbar puncture, and talk to the anxious parents of tuberculous meningitis and other grave diseases. A dose of calomel has been known to make all the other fuss superfluous. A story told of Sir John Erichsen is much to the point here. A woman had sustained an injury to her elbow and had seen several surgeons of note, who failed to give her relief or even give a satisfactory account of the nature of the injury. She was advised to consult Erichsen (then at the zenith of his fame) for a positive diagnosis. After careful examination he counseled the patient thus: "You say, Madame, that you have come to me for a positive opinion about your elbow, and I frankly admit that I cannot give you that opinion; but if you must have a positive opinion, there is the address of my young house-surgeon—he is just qualified—he will give you one."

No; we are none of us infallible, not even the youngest of us, and this fact should make us all, young and old alike, pause before we destroy hope, give even a suggestion of hopelessness, or light-heartedly give expression to opinions and prognosis which may quench forever the light from our patients' lives, and then if, after all, we should prove to be wrong, let us know that never—and the more if we are ordinarily skilful and have a reputation for medical or surgical skill—never shall we or our more careful colleagues be able entirely to remove the impression which our suggestion has made. Tell a patient, perhaps, a growth is malignant, or say lightly "it may be cancerous," or say flippantly, "Oh, your heart is bad," or, "I think your lung is slightly touched," you may not have meant to imply the serious thing your patient thinks you implied, but no matter what assurance he or she may receive from better men than you, and even two, three, or more better men than you, the fear, the haunting suspicion, will forever be in that patient's mind, "It may be true;" and long years after, when you have forgotten all about the patient—his or her ailment, and your opinion so haphazardly given—that baleful prognosis will be a gaunt spectre in that patient's mind, productive still of anxiety, foreboding, and fear, if not worse.